A Kit for Regulated Non-Municipal Drinking-Water System Owners and Operators

Step by Step Guides to Help You Understand Your Responsibilities

Ontario Drinking-Water Systems
Regulation O.Reg.170/03

Ministry of the Environment

Protecting our environment. Ontario

105-05167/

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Attention: Drinking Water System Owners and Operators

This ***NEW Kit for Regulated Non-Municipal Drinking Water System Owners*** replaces the original kit released in 2003. You will find links to the kit contents below.

The kit has been updated to include:

- Amendments filed in June and in December 2004 to the Drinking-Water Systems Regulation (O.Reg. 170/03)
- Changes brought about by The Certification of Drinking-Water Systems Operators and Water Quality Analysts Regulation (O. Reg. 128/04), and
- Changes introduced through The Drinking-Water Testing Services Regulation (O.Reg. 248/03).

It has also been reorganized so that you can more easily understand how the Drinking-Water Systems Regulation (O. Reg. 170/03) affects you. This kit will give you the information you need to:

- understand the purpose of the Drinking-Water Systems Regulation;
- decide if the regulation applies to you and your drinking water system;
- learn what exactly your regulatory responsibilities may be for your category of drinking water system; and
- determine how to get started in meeting these responsibilities.

Begin by reading Guide #1. It will help you get started and guide you through the kit. You can link directly to each of the guides in the Kit below.

Guide 1, Does the Regulation Apply to Me?

Guides 2A-2D, A Guide for Regulated, Non-Municipal Drinking water Systems (*Using Guide 1, determine which version of Guide 2 applies to your system*)

- Guide 2A, Non-Municipal Seasonal Residential Systems
- Guide 2B, Non-Municipal Year-Round Residential Systems
- Guide 2C, Small Non-Municipal Non-Residential Systems
- Guide 2D, Large Non-Municipal Non-Residential Systems

Guide 3, How to Collect Drinking Water Samples

Guide 4, Glossary of Terms

We would welcome your feedback on this new version of the kit. Send your comments to us at drinking.water@ene.gov.on.ca.

The Ontario Drinking-Water Systems Regulation
(O. Reg. 170/03)

Guide 1:
Does the Regulation apply to me?

A Guide for Owners and Operators of **Regulated Non-Municipal Drinking Water Systems**

Ontario Ministry of the Environment
December 2004

Protecting our environment. Ontario

This publication is provided for information purposes only.

The guide is the first part of a four-guide kit designed to assist owners and operators of regulated non-municipal drinking water systems to more fully understand their responsibilities in delivering safe, clean drinking water. However, readers are advised against using this document for compliance purposes. Reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03) and the *Safe Drinking Water Act, 2002* to ascertain an owner/operator's specific legal requirements and to determine whether or not a system is in compliance. The Act and its regulations may be obtained from Ontario's e-laws website at www.e-laws.gov.on.ca or by calling the Ministry's Public Information Centre at 1-800-565-4923.

This Guide is designed to be user-friendly.

The right-hand, shaded column summarizes the contents of each section and highlights the basic requirements under the regulation and **should be read first**. The left-hand side of the page contains the regulatory details needed to meet your regulatory responsibilities, as well as any section(s) of the regulations referred to on the page. It is recommended that you refer to the text of the regulation itself for full compliance instructions.

At the end of this Guide, you will find details about the next steps you need to take to meet your obligations under Regulation 170/03. Sources of additional information, including the other guides in this kit, are also provided.

Remember, this Guide is only a first step in making sense of the Ontario Drinking-Water Systems Regulation.

To be clear about your specific legal requirements, you must refer to the text of the Drinking-Water Systems Regulation (O.Reg.170/03) and the *Safe Drinking Water Act, 2002.* You can access these at www.ene.gov.on.ca under the section on Ontario's Water, or by calling our Public Information Centre at 1-800-565-4923.

Making Sense of the Ontario Drinking-Water Systems Regulation (O. Reg.170/03)

This Guide will help you, as an owner and/or operator of a non-municipal drinking water system, understand how the Drinking-Water Systems Regulation (O. Reg. 170/03) affects you. This Guide will give you the information you need to:

- understand why we needed a new Drinking-Water Systems Regulation;
- decide if the regulation applies to you and your drinking water system;
- learn what exactly your regulatory responsibilities may be; and
- determine how to get started in meeting these responsibilities.

Regulation sets standards to better protect drinking water

Ontario's Drinking-Water Systems Regulation (Ontario Regulation 170/03), made under the *Safe Drinking Water Act, 2002*, came into force on June 1st, 2003. It replaces both the Drinking Water Protection Regulation for Larger Waterworks (O. Reg. 459/00) and the Drinking Water Protection Regulation for Smaller Waterworks Serving Designated Facilities (O. Reg. 505/01). The Drinking-Water Systems Regulation addresses:

- the eight categories of regulated municipal and non-municipal drinking water systems;
- approval requirements;
- minimum levels of treatment (and applications for relief from those treatment requirements);
- schedules for operational checks, sampling and testing;
- who can operate your system, conduct checks, collect samples and perform tests;
- the testing of all drinking water samples by a licenced laboratory;
- reporting adverse test results and other problems;
- corrective action for different types of indicators of adverse water quality;
- warning notices;
- the preparation and submission of annual reports; and
- the retention of documents and records.

The new Regulation was developed after more than a year of government consultation, and after two years of monitoring, testing and analyses under the former water regulations. It adheres to Commissioner Dennis O'Connor's recommendations contained in "Part Two: Report of the Walkerton Inquiry".

What is the Drinking-Water Systems Regulation?

The Drinking-Water Systems Regulation (Ontario Regulation 170/03), made under the *Safe Drinking Water Act, 2002* (SDWA), sets forth the legal requirements for owners and operators of both municipal and regulated non-municipal drinking water systems. The Regulation came into effect on June 1, 2003. It replaces Ontario Regulations 459/00 and 505/01, and extends its application to other drinking water systems, including small residential and commercial/institutional systems that serve drinking water to the public.

The Ontario Ministry of the Environment has prepared a "Compendium to Drinking-Water Systems Regulation (170/03)" that describes the regulatory provisions in more detail. This and a number of additional resources, including links to drinking water-related statutes, regulations and procedures, can be accessed through the Ministry's website at www.ene.gov.on.ca. See the back page of this publication for details.

Regulations under the *Safe Drinking Water Act* (SDWA)

- **O. Reg. 128/04 – Certification of Drinking-Water Systems Operators and Water Quality Analysts**
- **O. Reg. 248/03 – Drinking-Water Testing Services**
- **O. Reg. 169/03 – Ontario Drinking-Water Quality Standards**
- **O. Reg. 171/03 – Definitions of Words & Expressions Used in the Act**
- **O. Reg. 172/03 – Definition of "Deficiency" and "Municipal Drinking-Water System"**
- **O. Reg. 173/03 – Schools, Private Schools and Day Nurseries** (Sets requirements for the weekly flushing of plumbing systems by schools, private schools and day nurseries.)

The Drinking-Water Systems Regulation and all the supporting regulations are available on-line at www.e-laws.gov.on.ca. See the back page of this guide for details.

The Drinking-Water Systems Regulation refers to the two procedures listed below. These procedures are technical documents that constitute legal requirements under the regulation. They provide detailed instructions for the proper operation of your drinking water system.

Procedure for Disinfection of Drinking Water in Ontario, Ministry of the Environment, originally dated April 16, 2003 (as amended from time to time)

This procedure deals with the design of filtration and disinfection facilities to obtain the required treatment performance. It supersedes MOE Procedure B13-3, "Chlorination of Potable Water Supplies in Ontario", dated January 2001.

Procedure for Corrective Action for Systems Not Currently Using Chlorine, Ministry of the Environment, originally dated April 16, 2003 (as amended from time to time)

This document provides procedures for corrective action related to adverse microbiological test results from drinking water samples taken. It applies to drinking water systems that are not currently required to have treatment equipment installed.

What Additional Regulations and Procedures Govern Drinking Water Systems in Ontario?

In addition to the Drinking-Water Systems Regulation (O. Reg. 170/03), there are six other regulations under the *Safe Drinking Water Act* that set out legal requirements for various other areas, such as drinking water standards, operator training and certification, and laboratories.

The Drinking-Water Systems Regulation (O. Reg. 170/03) references two procedures. These are technical documents referenced in a regulation and constitute legal requirements under that regulation. They provide more detailed instructions for the proper operation of your drinking water system.

Copies of the relevant regulations and procedures can be obtained through the Ministry of the Environment's website at www.ene.gov.on.ca.

Regulation 170/03 covers most drinking water systems

The Drinking-Water Systems Regulation (O. Reg. 170/03) applies to you if you own or operate a business or service facility of any kind that serves the public and relies on its own source of water – to supply washrooms, drinking water fountains, showers or similar fixtures. In addition, daycare centres, schools, nursing homes and other designated facilities serving vulnerable populations, formerly regulated under O. Reg. 505/01, are part of the new regulation.

However, Regulation 170/03 does not apply to:

- small residential systems that serve a seasonal or permanent community of five or fewer residences; or
- small non-residential systems that supply drinking water at a rate of less than 2.9 litres per second (equivalent to less than 250,000 litres per day) which do not serve a designated facility or public facility; or
- facilities connected to municipal systems or other regulated systems. If you are connected to and your water comes directly from a municipal system or other regulated system, AND all your piping is plumbing under the building code, then the Drinking-Water Systems Regulation does not apply to you and nothing is required of you.

Note: If your drinking water system is connected to and obtains all of its water from another drinking water system that provides secondary disinfection in accordance with the regulation, and the owner of the system providing the water has agreed in writing:

(1) to ensure that the secondary disinfection equipment is operated so that at all times and at all locations of your distribution system the required free or combined chlorine residual is maintained (whichever applies), and

(2) to sample and test the water in the distribution system of the system that obtains the water as if it were part of the distribution system of the system providing the water,

you are exempt from most of the requirements of O. Reg. 170/03. See sections 5 and 6 of the regulation for more details.

Further details of the requirements, including information on regulatory relief provisions (such as relief from treatment and posting signs telling the users the water has not been tested or treated) for regulated non-municipal drinking water systems can be found in this resource package as Guides 2a, 2b, 2c and 2d.

Is My System Covered under the Drinking-Water Systems Regulation?

Ontario's Drinking-Water Systems Regulation (O. Reg. 170/03) expands regulatory coverage to a wider range of drinking water systems than were governed under its two predecessor regulations, O. Reg. 505/01 ands 459/00.

However, regulatory relief may be allowed for certain non-municipal drinking water systems. Regulatory relief will be discussed in further detail in the appropriate system-specific guides included in this resource package as 2a,2b,2c and 2d.

See Section 4 for application of the Drinking-Water Systems Regulation (O. Reg. 170/03).

What are the Categories of Regulated Non-Municipal Drinking Water Systems?

Regulatory requirements are tailored, in part, according to the category and size of a particular drinking water system. There are eight categories of drinking water systems that are regulated under the Drinking-Water Systems Regulation (O. Reg. 170/03): four categories of municipal systems and four categories of non-municipal systems.

This guide is designed to assist owners of systems in the following four categories of non-municipal systems:

- Non-Municipal Seasonal Residential Systems
- Non-Municipal Year-Round Residential Systems
- Small Non-Municipal Non-Residential Systems
- Large Non-Municipal Non-Residential Systems

See Section 1 of O. Reg. 170/03 for the categories of drinking water systems set forth under the Drinking-Water Systems Regulation.

There are four categories of regulated non-municipal drinking water systems.

Seasonal Residential Systems

Defined in the Drinking-Water Systems Regulation as a drinking water system that serves six or more private residences, or a trailer park or campground with six or more service connections, where the system is a seasonal system[1]. For example, a system in this category would shut down seasonally (for at least two months of the year) and typically serve a private cottage development, or a trailer park or campground.

Year-Round Residential Systems

Defined as a drinking water system that serves six or more private residences, or a trailer park or campground with six or more service connections, and the system is not a seasonal system. For example, a system in this category may serve an apartment building, a private subdivision, a condominium or townhouse complex, a mobile home park, a year-round private cottage development[2], or a year-round trailer park or campground.

Small Non-Residential Systems

Defined as a drinking water system that serves, for example, a hotel, resort, restaurant, gas station, church, campground (with less than six service connections), a designated facility (see footnote 5 on the next page) or other public facility (see footnote 6 on the next page), and is not capable of supplying drinking water at a rate greater than 2.9 litres per second (equivalent to 250,000 litres/day).

Large Non-Residential Systems

Defined as a drinking water system that serves, for example, an industrial facility, hotel, resort, trailer park or campground (with less than six service connections), or a large designated facility (see footnote 5 on the next page), and is capable of supplying drinking water at a rate greater than 2.9 litres per second (equivalent to 250,000 litres/day).

Additional Notes:

- Water used for drinking water purposes does not include water that is used for agriculture, landscaping, industrial or manufacturing operations (including food manufacturing or processing), and swimming pool or skating rink maintenance purposes.

Designated and public facilities are listed in the Regulation (see footnotes 5 and 6 on the next page). Systems that fall into any of the above categories may also serve a designated or public facility. If you serve a designated facility, you may have different and/or additional treatment, sampling, testing frequency and reporting requirements.

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[1] A "Seasonal System", as defined in O. Reg. 170/03, is (1) any system that will not be operated for at least 60 consecutive days during any 365-day period, or (2) does not operate for at least 60 consecutive days in every period that begins on April 1st in one year and ends on March 31st in the following year.

[2] Cottages are normally defined as private residences for the purposes of the Regulation, unless they are used primarily for the purpose of renting to the travelling public.

How Do I Determine the Appropriate Category of My Non-Municipal Drinking Water System?

It is very important that you understand which category of non-municipal drinking water system your system falls within. To make this process as easy as possible, this guide will walk you through a series of questions that will help determine the appropriate category of drinking water system.

Begin by answering these questions …

Question One

Does your non-municipal drinking water system serve six or more private residences[3] or a trailer park/campground with six or more service connections?

If YES, your system could fall within:
* Year-Round Residential (Go to Question Two) , or
* Seasonal Residential (Go to Question Two).
If NO, your system could fall within:
* Large Non-Residential (Go to Question Three), or
* Small Non-Residential (Go to Question Three).

Question Two

If you answered YES to Question One, does your system operate seasonally[4]?

* If YES, your system is Seasonal Residential.
* If NO, your system is Year-Round Residential.

Question Three

If you answered NO to Question One, is your system capable of supplying drinking water at a rate of greater than 2.9 litres per second? (Refer to pages 9-11, to determine your system's capability.)

* If YES, your system is a Large Non-Residential.
* If NO, your system may be a Small Non-Residential (Go to Question Four).

Question Four

If you answered NO to Question Three, do you serve a designated facility[5] or public facility[6]?

* If YES, your system is a Small Non-Residential.
* If NO, your system is NOT subject to the Regulation.

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[3] A "Private Residence", as defined in O. Reg. 171/03, is a dwelling place occupied for an extended period of time by the same persons, if, (a) the residents have a reasonable expectation of privacy, (b) food preparation, personal hygiene, and sleeping accommodations are not communal in nature, and (c) any use of the dwelling place by a resident for a home occupation, trade, business, profession or craft is secondary to the use of the dwelling place as a residence and does not use more than 25 per cent of the indoor floor area.

[4] A "Seasonal System", as defined in O. Reg. 170/03, is (1) any system that will not be operated for at least 60 consecutive days during any 365-day period, or (2) does not operate for at least 60 consecutive days in every period that begins on April 1st in one year and ends on March 31st in the following year.

[5] A "Designated Facility", as defined in O. Reg. 170/03, is: a children's camp; a delivery agent care facility; a health care facility; a school or private school; a social care facility; or a university, a college of applied arts and technology, or an institution with authority to grant degrees

[6] A "Public Facility", as defined in O. Reg. 170/03, is: a food service establishment; a place that operates primarily for the purpose of providing overnight accommodation to the travelling public; a trailer park or campground; a marina; a church, mosque, synagogue, temple or other place of worship; a recreational camp; a recreational or athletic facility; a place, other than a private residence, where a service club or fraternal organization meets on a regular basis; or any place where the general public has access to a washroom, drinking water fountain or shower.

First, determine your water use patterns.

If your system supplies water through dedicated lines for the following operations (and the dedicated lines supply water exclusively to such operations), then, the water used for these operations does not have to be included in determining the system's water supply capability:

- agricultural operations,
- landscaping operations,
- industrial or manufacturing operations, including food manufacturing or processing operations, and
- swimming pool or skating rink maintenance operations.

If your system supplies water for these operations, and you do not want water used for these operations to be included as part of the category determination, you must calculate the sum of the average rates, expressed in litres per second, at which your system supplied water in the preceding calendar year to the lines which exclusively supply such operations. This can be done using measured flow rates, engineer's calculations, or other methods of estimation. If you have a new system that has not yet been in operation for a year, you can provide a reasonable estimate of what the result would be, rather than an actual figure or calculation.

For example, when determining the capability of a system serving a golf course -- where water is used for the club house building, landscaping, and several drinking fountains -- you do not have to include the water supplied through dedicated lines that is used exclusively for landscaping. This would occur after the branch in lines where water is used for shared purposes.

How Do I Determine Whether My Non-Residential Drinking Water System Capability Is "Large" or "Small"?

In order to know whether your system falls into the Large Non-Residential category or the Small Non-Residential category, you need to know if the rate at which your system is capable of supplying drinking water is more or less than 2.9 litres per second (a rate equivalent to 250,000 litres per day). However, before making the necessary calculations, it is important to determine the amount of water being used for drinking water purposes.

Next, calculate your system's flow rate.

The flow rate capability of a water works is the maximum instantaneous flow rate that may be achieved under normal operating conditions at any location within the drinking water system (water supply and distribution system). This rate is not necessarily the flow rate capability of the well pump; if the system has an underground reservoir and high lift pump(s), it is the (combined) flow rate capability of the high lift pump(s).

The nominal pump capacity (normally shown on the pump's plate) is not the flow rate capability of the pump installed as part of a drinking water system. For the purpose of determining the flow rate capability of a drinking water system, the pump rating has to consider the operating head against which the pump has to operate.

Ministry of the Environment design guidelines state that the minimum water system distribution pressure should be 40 pounds per square inch (psi) except under a fire flow condition where it could drop to 20 psi.

Where an in-situ pump output test is conducted for a centrifugal pump (for example, a high lift pump in a reservoir), the pump test should be done in pump "flooded suction" conditions (that is, the level of water on the suction side of the pump should come up to at least the centerline of the pump impeller). Centrifugal pumps do not operate on anything less.

For output tests of submersible well pumps, the 40 psi minimum operating head is to be measured from the discharge piping or header in the well pump house (not the static level of water in the well).

If the pump test is conducted using a flow meter and a pressure gauge, this equipment should be calibrated prior to the test. Flow measuring devices are to be calibrated at regular intervals not exceeding one year to ensure that accuracy is within plus or minus 5 per cent of actual rate of the flow within the range of 10 to 100 per cent of full scale reading of the measuring devices.

Note that the flow rate capability of the system must be expressed as a maximum rate, in litres per second. The sum of the average rates, also expressed in litres per second, at which the drinking water system supplied drinking water in the preceding calendar year to the distribution lines that supply water exclusively for operations other than for drinking purposes (as described) should be subtracted from the overall maximum flow rate capability of the system, in order to determine if the system is a Large or Small Non-Residential system for the purposes of the Regulation.

How Do I Determine the Flow Rate Capability of a Drinking Water System Using an Engineer's Calculation?

1. Add up all the average water flows (in units of litres per second) through pipes that supply water exclusively for non-potable uses.
2. Subtract this "non-potable" flow total from the drinking water system's total flow capability (in units of litres per second).
3. The result is the capability of your system to supply drinking water.

This four-step method for determining flow rate does not rely on the use of an engineer's calculation.

Step 1

Determine nominal pump capacity from pump plate or documentation. Hire a certified well contractor or plumber if necessary.

Step 2

If nominal pump capacity is less than or equal to 2.9 litres per second, then your system falls into the Small Non-Residential category.

Step 3

If nominal pump capacity is greater than 2.9 litres per second, but the pump capacity minus the average water flow rates through the dedicated non-drinking water supply lines is less than 2.9 litres per second, then your system falls into the Small Non-Residential category.

Step 4

If nominal pump capacity minus the average water flow rates through the dedicated non-drinking water supply lines is greater than or equal to 2.9 litres per second, your system is considered to fall into the Large Non-Residential category, unless an engineer's calculation (as described on the previous page) is carried out and concludes otherwise.

How Do I Determine the Flow Rate Capability without Using an Engineer's Calculation?

It may be possible to determine the flow rate capacity of a system, without using the engineer's calculation method, based on the nominal pump capacity. The four-step system described on this page is used to determine whether the system falls into the Small Non-Residential or the Large Non-Residential category.

What are GUDI drinking water systems?

The following drinking water systems are considered systems that obtain water from groundwater under the direct influence of surface water (GUDI)[7]:

1. A drinking water system that obtains water from a well that is not a drilled well or from a well that does not have a watertight casing that extends to a depth of at least 6 metres below ground level.
2. A drinking water system that obtains water from an infiltration gallery.
3. A drinking water system that is not capable of supplying water at a rate of 0.58 litres per second and that obtains water from a well, any part of which is within 15 metres of surface water.
4. A drinking water system that is capable of supplying water at a rate of 0.58 litres per second and that obtains water from an overburden well, any part of which is within 100 metres of surface water.
5. A drinking water system that is capable of supplying water at a rate of 0.58 litres per second and that obtains water from a bedrock well, any part of which is within 500 metres of surface water.
6. A drinking water system that has been contaminated by surface water.
7. A drinking water system for which a written report has been prepared by a professional engineer or professional hydrogeologist that concludes that the system's raw water supply is groundwater under the direct influence of surface water and that includes a statement of his or her reasons for reaching that conclusion.

Possible Exceptions:
If a written report has been prepared by a professional engineer or professional hydrogeologist that concludes that your system's groundwater supply is not under the direct influence of surface water and includes a statement of his or her reasons for reaching that conclusion, the above deeming rules do not apply to your system.

How Do I Determine if My Groundwater System is Under the Direct Influence of Surface Water (GUDI)?

Your regulatory requirements depend on your water source. For example, owners of certain systems can apply for an exemption from the minimum treatment requirements UNLESS they obtain their water from a surface water source or a groundwater source directly influenced by a surface water source.

The Regulation provides instructions for determining whether your raw water supply is under the direct influence of surface water. These systems are called GUDI systems, and are subject to the same requirements as surface water systems. If you are not sure if you operate a GUDI system, please review the attached list.

If your system is deemed to be a GUDI under the Regulation, follow the regulatory requirements for surface water drinking water systems. If your system is not deemed to be a GUDI, follow the regulatory requirements for groundwater systems.

See Section 2 for determining whether a drinking water system is a GUDI system under the Drinking-Water Systems Regulation (O. Reg. 170/ 03).

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[7] According to section 2 of the Drinking-Water Systems Regulation (O. Reg. 170/03).

To ensure that you have accurately categorized your drinking water system under O. Reg. 170/03, you must register on the Ministry of the Environment's Drinking Water Information System (DWIS).

Registration on this system also allows you to make submissions to the Ministry; as specified by the provisions of O. Reg. 170/03.

The Drinking Water Information System gathers, in one place, information about municipal and non-municipal drinking water systems across the province. This information will help the province, municipalities and non-municipal systems meet our shared commitment to safe, clean drinking water for the people of Ontario.

A new user must first register in order to obtain the drinking water system number, user name and password needed to use DWIS.

To register your drinking water system in DWIS, the owner has to make three submissions:

A *Drinking Water System Categorization* questionnaire,
A *Drinking Water System Profile* questionnaire, and
A *Laboratory Services Notification Form*.

To access the Drinking Water System Registration, go to the Ministry of the Environment's homepage at www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System. You will access the DWIS main page (www.ene.gov.on.ca/environet/DWIS/index.htm). Click on eForm and follow the onscreen instructions as you complete a *Drinking Water System Categorization* and a *Drinking Water System Profile* for your system. Once you have registered, you will be sent an email with your drinking water system number, user name and password.

Once you have access to DWIS, you will be able to log in. DWIS can be accessed from the Ministry's homepage at www.ene.gov.on.ca, click on Water, and then DWIS. Once at the DWIS main page (www.ene.gov.on.ca/environet/DWIS/index.htm) click on DWIS to access a log-in screen where you must enter your user name and password.

You must then complete a *Laboratory Services Notification Form* to inform the Ministry of the Environment about which Licenced laboratory you will use to analyze your drinking water samples.

To submit other notices and reports, you will need to select the option from the main menu and follow the on-screen instructions. You can also access DWIS from your local Government Information Centre.

For assistance with the registration of your Drinking Water system, call 1-866-793-2588.

What happens if you do not have access to the internet?
The Ministry of the Environment requires electronic submission of information. However, you may be authorized to make paper submissions under special circumstances (e.g. if you do not have internet access).

To pursue this option, you must send a letter requesting non-electronic submission due to the unavailability of internet access to:
The Director
Drinking Water Program Management Branch
2 St. Clair West
Toronto, Ontario, M4V 1L5

When using this option, you will receive a paper package. You must then complete the necessary forms and return them to the Ministry of the Environment as soon as possible. The Ministry will input the information you send into DWIS on your behalf.

The Next Step ... Registration

Now that you've completed all the steps to determine which of the four non-municipal categories included in O.Reg.170/03 your drinking water system fits in, you will want **to confirm the drinking water system category** your systems fits under.

You can do this by registering on the Ministry of the Environment's Drinking Water Information System. You must complete the *Drinking Water System Categorization*, and *Drinking Water System Profile* questionnaires along with a *Laboratory Services Notification Form*. You can do this one of two ways:

1. To register online, go to the Ministry's homepage at www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System. Follow the on-screen instructions.
2. To access DWIS and obtain more information, you can also visit your local Government Information Centre. To find a centre near you, call 1-800-267-8097.
3. You may be authorized to make paper submissions under special circumstances (i.e. if you do not have internet access).

For registration assistance, please call 1-866-793-2588.

This is the first guide in a four-guide resource package.

The Ontario Ministry of the Environment has prepared a series of guides for the four categories of regulated, non-municipal drinking water systems. If you do not have a copy of the relevant guides, please contact the nearest Ministry office for a copy, download an electronic version from the Ministry's website at www.ene.gov.on.ca, or call our Public Information Centre at 1-800-565-4923. See the back page of this guide for other sources of information.

Guide 1, Does the Regulation Apply to Me?

Guides 2A-2D, Meeting my responsibilities under the Regulation

- Guide 2A, Non-Municipal Seasonal Residential Systems
- Guide 2B, Non-Municipal Year-Round Residential Systems
- Guide 2C, Small Non-Municipal Non-Residential Systems
- Guide 2D, Large Non-Municipal Non-Residential Systems

Guide 3, How to Collect Drinking Water Samples

Guide 4, Glossary of Terms

Note: reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03), the *Safe Drinking Water Act*, 2002, and the other related regulations and procedures to ascertain an owner/operator's specific legal requirements. See back cover for details.

Finally, Obtain the Specific Information You Need to Meet Your Responsibilities.

Now that you have identified the category of your drinking water system, and whether it is considered under the direct influence of a surface water source, you are ready to investigate further your regulatory responsibilities under the Drinking-Water Systems Regulation (O. Reg. 170/03).

If you do not have a copy of the relevant guides listed on the left hand side of this page, please contact the nearest Ministry office for a copy, or download an electronic version from the Ministry's website at www.ene.gov.on.ca. See the back cover for details.

How do I obtain the documents and contact information I need?

How can I obtain a copy of the Drinking-Water Systems Regulation and additional information on my regulatory responsibilities?	Visit the Ministry website at www.ene.gov.on.ca, click on "Water" then scroll down the page and click on "Drinking-Water Systems Regulation – Information Page" (http://www.ene.gov.on.ca/envision/water/sdwa/dwsr.htm). This will take you to a full page of links to key documents, technical updates, laboratory licencing information, legislation and regulations, forms, general information and related documents. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
How do I find a Licenced laboratory for analyzing my drinking water samples?	Check the Ministry website for a list of laboratories Licenced to perform drinking water testing under the *Safe Drinking Water Act*, available at: http://www.ene.gov.on.ca/envision/water/sdwa/Licencedlabs.htm. You can also call the Ministry of the Environment Laboratory Licencing Administrator at 416-235-6370.
How do I contact the Local Medical Officer of Health or the Public Health Unit for my community?	Check the "Blue Pages", under the heading "Health", in your local telephone directory for the listing of your public health unit. You can also visit the website of the Ministry of Health and Long-Term Care (MOHLTC) at www.health.gov.on.ca, or call the MOHLTC info-line at 1-800-268-1154, or 416-314-5518 in Toronto.
Where can I find the nearest local or regional office of the Ministry of the Environment?	Check the "Blue Pages", under the heading "Environment", in your local telephone directory. You can also visit the Ministry website at www.ene.gov.on.ca and look under the heading "About the Ministry" on the home page. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
Where can I find more information on training and certification of system operators?	Contact the Ontario Environmental Training Consortium (OETC) through its website at www.oetc.on.ca, or by telephone at 905-796-2851. For more information, the new Certification of Drinking-Water System Operators and Water Quality Analysts Regulation (O. Reg. 128/04) is available at: http://www.e-laws.gov.on.ca/DBLaws/Regs/English/040128_e.htm.

The Ontario Drinking-Water Systems Regulation
(O.Reg. 170/03)

Guide 2A:
What are my responsibilities under O.Reg.170/03?

A Guide for Owners and Operators of **Non-Municipal Seasonal Residential Drinking Water Systems**

Ontario Ministry of the Environment
December 2004

Protecting our environment. Ontario

This publication is provided for information purposes only.

This guide is the second guide of a four-guide kit designed to assist owners and operators of regulated non-municipal drinking water systems more fully understand their responsibilities in delivering safe, clean drinking water. However, readers are advised against using this document for compliance purposes. Reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03) and the *Safe Drinking Water Act, 2002* to ascertain an owner/operator's specific legal requirements and to determine whether or not a system is in compliance. The Act and its regulations may be obtained from Ontario's e-laws website at www.e-laws.gov.on.ca.

This Guide is for you if you are an owner or operator of a non-municipal drinking water system that:

- is a seasonal system that, (a) does not operate for at least 60 consecutive days in every calendar year, or (b) does not operate for at least 60 consecutive days in every period that begins on April 1 in one year and ends on March 31 in the following year, and
- serves (a) a major residential development (six or more private residences), or (b) a trailer park or campground that has more than five service connections.

This Guide is NOT for use by:

designated facilities including children's camps, health care facilities, a delivery agent care facility, a school or private school, a social care facility, a university, college or institution with authority to grant degrees.

This Guide is designed to be user-friendly.

The right-hand, shaded column summarizes the contents of each section and highlights the basic requirements under the regulation. **You should read this first.** The left-hand side of the page contains the regulatory details needed to meet your regulatory responsibilities, as well as a reference to the appropriate section on the regulations. It is recommended that you refer to the text of the regulation itself for full compliance instructions.

Sources of additional information, including the other guides in this resource package, are also provided.

Remember, this guide is only a summary tool.
To be clear about your specific legal requirements, you must refer to the text of the Drinking-Water Systems Regulation (O.Reg.170/03) and the *Safe Drinking Water Act, 2002.* You can access these at www.ene.gov.on.ca under the section on Water, or by calling our Public Information Centre at 1-800-565-4923.

How Does The Kit Work?

This Kit for Regulated Non-Municipal Drinking Water Systems contains a number of Guides that, together, are designed to help owners and operators of regulated systems deliver safe, clean drinking water.

The Kit is made up of 4 Guides:

Guide 1: Does the Regulation apply to me?

Guide 2: What are my responsibilities under O. Reg 170/03?

(There are 4 versions of Guide 2, one for each of the non-municipal drinking water categories as defined in O. Reg 170/03. Refer to Guide 1 to determine which category your system falls into and whether you should use Guide 2a, 2b, 2c or 2d.)

Guide 3: How to Collect Drinking Water Samples

Guide 4: Glossary of Terms

Checklist for owners and operators of regulated non-municipal seasonal residential drinking water systems

Step 1: Register Your Drinking Water System.

☐ Where do I register my drinking water system?
☐ What must I complete and submit to register my system?

Step 2: Select a Licenced Laboratory to Analyze Your Drinking Water samples

☐ How do I choose a Licenced laboratory for testing my drinking water samples?
☐ How can I find out if a laboratory is Licenced for specific testing?

Step 3: Know and Meet Your Sampling and Testing Requirements

☐ What procedures must I follow when samples are collected?
☐ What are my microbiological sampling and testing requirements?
☐ What are my chemical sampling and testing requirements?
☐ Also refer to Step 7 to learn the Operational Checks required

Step 4: Provide A "Minimum Level of Treatment"

☐ What are the minimum treatment requirements?
☐ What are the requirements for Groundwater Supplies?
  - Primary Disinfection

☐ What are the requirements for Surface Water (or a GUDI Source) Supplies?
  - Filtration and Primary Disinfection
  - Secondary Disinfection

☐ What are the deadlines for providing treatment equipment?
☐ Do I need to submit written notice of my intentions?

Step 5: Have an Engineering Evaluation Report Completed and Submit Written Notice to the Ministry of the Environment

☐ What must my Engineering Evaluation Report cover and who must complete it?
☐ When is my Engineering Evaluation Report Due?
☐ When must I submit a written notice to the Ministry?
☐ When must I submit subsequent Engineering Evaluation Reports?
☐ What exemptions are available?

Step 6: Have A 'Trained Person' Adjust Equipment and Conduct Operational Checks

☐ Who can operate my drinking water system and conduct operational tests?
☐ What duties must be performed by a 'trained person'?
☐ What courses are available to qualify as a 'trained person'?
☐ What courses are recognized and approved by the Ministry of the Environment for Water Quality Analysts?

Let's Get Started.

As an owner/operator of a regulated non-municipal seasonal residential drinking water system[1], you have an obligation to familiarize yourself with your duties under Ontario's Drinking-Water Systems Regulation (O. Reg. 170/03) and the other associated regulations and procedures that govern drinking water systems. This guide explains each of the regulatory requirements that apply to you, including:

- Registering your drinking water system
- Selecting a Licenced laboratory
- Meeting sampling and testing requirements
- Installing treatment equipment to meet a minimum level of treatment
- Preparing Engineering Evaluation Reports and written notices
- Using trained persons
- Conducting operational checks
- Notifying authorities of adverse test results and other problems
- Taking corrective action
- Posting warning notices

Continued...

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[1] According to section 1 of the Drinking Water Systems Regulation (O. Reg. 170/03), a "non-municipal seasonal residential system" means a non-municipal drinking-water system that is a seasonal system and serves (a) a major residential development, or (b) a trailer park or campground that has more than five service connections. A "seasonal system" means a drinking-water system that, (a) does not operate for at least 60 consecutive days in every calendar year, or (b) does not operate for at least 60 consecutive days in every period that begins on April 1 in one year and ends on March 31 in the following year.

Step 7: Undertake Operational Checks

- What operational checks must I undertake?
- How do I test for turbidity?
- How do I test for residual chlorine?
- What exception exists for seasonal residential systems?
- What are my monitoring and reporting requirements?

Step 8: Determine if You Can Apply for Full Relief from Requiring Any Treatment

- Who can apply for full relief from treatment requirements?
- How do I apply?
- Must I consult with the users of my system?
- What exemptions from providing treatment, testing, etc. exist under section 8?
- What exemptions exist for residential systems (under section 5)?

Step 9: Notify Authorities of Adverse Test Results and Other Problems

- What adverse test results and other problems must I report?
- Who must I notify and how must I notify them of these problems?

Step 10: Take Corrective Action

- What corrective actions must I take when adverse test results are received or other problems are observed?

Step 11: Post Warning Notices of Potential Problems

- When is it necessary to post a warning notice?
- Where do I post the warning notice?
- What must the warning notice say and where can I obtain them?

Step 12: Make Information Available to the Public

- What reports and documents must I make available to the public?

Step 13: Prepare and Submit an Annual Report

- How do I prepare my Annual Report?
- When is the first Annual Report due?

Step 14: Retain Required Reports and Documents.

- What records must I retain? And for how long?

- Making required information available
- Submitting an annual report
- Retaining required records

The guide also clarifies an option that exists in the regulation that can allow you to apply for full relief from treatment requirements. Step 8 will help you determine if you can apply for such relief.

Where do I register my drinking water system?

You must categorize your drinking water system under the Drinking-Water Systems Regulation (O. Reg. 170/03), and register it on the Ministry of the Environment's Drinking Water Information System (DWIS). Registration on this system also gives you the access you will need to make submissions to the Ministry as specified by the provisions of O. Reg. 170/03.

The Drinking Water Information System (DWIS) gathers, in one place, information about municipal and non-municipal drinking water systems across the province. This information will help the province, municipalities, non-municipal systems and Licenced laboratories meet our shared commitment to safe, clean drinking water for the people of Ontario.

Once you have finished registration, you will be able to log into DWIS at www.ene.gov.on.ca/environet/DWIS/index.htm

What must I complete and submit to register my system?

To register, the drinking water system owner has to make one submission that includes the completion of:

- A *Drinking Water System Categorization* questionnaire,
- A *Drinking Water System Profile* questionnaire, and
- A *Laboratory Services Notification Form*

To access the Drinking Water Information System Registration, go to www.ene.gov.on.ca/environet/DWIS/index.htm. Follow the onscreen instructions as you complete the submissions.

The Ministry of the Environment requires electronic submission of information. However, you may be authorized to make paper submissions under special circumstances (e.g. if you do not have internet access). For more information, refer to Guide 1 under 'Registration.'

To speak with someone at the registration desk, call 1-866-793-2588.

Step 1:
Register Your Drinking Water System

You must register your drinking water system on the Ministry of the Environment's Drinking Water Information System (DWIS). You must complete the *Drinking Water System Categorization*, and *Drinking Water System Profile* questionnaires along with a *Laboratory Services Notification Form.* You can do this one of three ways:

1. To register online, go to the Ministry's homepage at www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System. Follow the on-screen instructions.
2. To access DWIS and obtain more information, you can also visit your local Government Information Centre. To find a Centre near you, call 1-800-267-8097 toll-free.
3. You may be authorized to make paper submissions under special circumstances (i.e. if you do not have internet access).

Refer to Guide 1 for more details on registration.

Step 2:
Select a Licenced Laboratory to Analyze Your Drinking Water samples

When you send the drinking water samples that are required by the Drinking-Water Systems Regulation to a laboratory for testing, the testing must be carried out by a laboratory that is Licenced by the Ministry of the Environment for each specific parameter being tested. While some laboratories may be Licenced to test for all the microbiological and chemical parameters required by the Regulation, others may be Licenced to test only microbiological parameters and/or only some chemical parameters.

How do I choose a Licenced laboratory for testing my drinking water samples?

When you send your drinking water samples to a laboratory for analysis, there are a number of conditions you and the laboratory must meet. It is up to you to ensure each of the following:

- The laboratory must be Licenced by the Ministry to test for the specific parameter(s) you need analyzed. A Licenced laboratory must use accredited testing methods for each parameter it tests. Licenced laboratories are required to meet strict conditions in order to be Licenced for the testing of specific parameters by the Ministry of the Environment. Each laboratory is inspected by the Ministry's Specialized Laboratory Inspectors at least twice a year.
- Laboratories may accept your samples but then may need to sub-contract them to an appropriately Licenced laboratory. They must have your written permission to do so.
- As of October 1, 2003, if the laboratory performing the analysis is located outside Ontario, then ensure they are on a list of eligible out-of-province laboratories (check with the Ministry of Environment through the Ministry's website at: http://www.ene.gov.on.ca/envision/water/sdwa/Licencedlabs.htm or by contacting the Ministry's Service Desk at 1-866-494-6663)
- You must submit a written notice to the Ministry of the Environment identifying the Licenced laboratory(ies) that will be carrying out the testing before you send your samples to the laboratory(ies) for the first time. Once you have submitted the *Laboratory Services Notification Form*, you do not have to submit it again unless you change a laboratory or you change the testing services provided by a laboratory. Laboratories will assist you with completing this submission to ensure that the correct information is submitted.
  Note: It is strongly recommended that owners include a back-up laboratory on their *Laboratory Services Notification Form* in case the primary laboratory encounters unforeseen equipment/testing problems.
- It is the responsibility of the Licenced laboratory to ensure that they send a written report to you or the operator of the drinking water system and an electronic report to the Ministry of the Environment of all required test results within 28 days of your drinking water samples being analyzed and the data being approved.

How can I find out if a Laboratory is Licenced for specific testing?

1. View the list of Licenced Laboratories on the Ministry's web site: http://www.ene.gov.on.ca/envision/water/sdwa/Licencedlabs.htm or
2. Contact the Public Information Centre at 1-800-565-4923 or (416) 325-4000, or
3. Contact a laboratory directly and ask them what they are Licenced to test for.

Notify the Ministry about the Licenced Laboratories you have selected using DWIS.

You must notify the Ministry of the Environment when you have selected the laboratories that will carry out the analyses of your drinking water samples. Notice must be made using the approved submission – *Laboratory Services Notification Form* - that is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

What procedures must I follow when samples are collected?

- Whenever a sample is collected, the person taking the sample must record the date and time the sample was taken, the location where the sample was taken, and the sampler's name on the Laboratory Chain of Custody Form. (This form can be obtained directly from the Drinking Water Information System or you can obtain a Ministry-inspected *Chain-of-Custody Form* from the laboratory conducting the tests. The laboratory's form will be customized for the drinking water system and sent to the sampler with the sampling containers.) In addition, a Licenced laboratory will record the date and time the sample was tested, the results of the tests and the name of the person who conducted the test.
- You must discuss and make contractual agreements with the Licenced laboratories that perform the analytical tests for microbiological and chemical parameters. How often the samples have to be collected, and from where, depends on the type of test being performed. Laboratories must provide you with instructions on proper techniques for sample collection, transport storage and preservation, and will supply the appropriate containers.
- You must ensure that samples for microbiological testing are kept between 4 - 10°C until they are delivered to the Licenced laboratory. Do not freeze samples.

What are my microbiological sampling and testing requirements?

How often to collect samples (at a minimum).

Samples must only be collected during the operating season

- Raw drinking water samples: once a month
- Distribution samples: once a week if not chlorinating[2] or chloraminating, or once every two weeks if chlorinating or chloraminating, with an additional sample each month for every 100 service connections

Specific parameters for testing

- *E. coli* or fecal coliforms
- Total coliforms
- HPC (only in distribution samples)

Where to collect samples

- Raw drinking water samples: raw water source (i.e. lake, river, etc.) and if using groundwater, then from each well.
- Distribution samples: from the distribution system or plumbing.

Step 3:
Know and Meet Your Sampling and Testing Requirements

Previous drinking water regulations provided for tough monitoring standards and these are continued in the Drinking-Water Systems Regulation (O. Reg. 170/03). The sampling and testing requirements – for bacteria, including *E. coli*, and chemicals, such as PCBs and pesticides – have been designed to reflect the size and population served and the needs of each of the categories of drinking water systems

The collection and transport of drinking water samples may affect the accuracy of your test results!

See Guide 3 of this Resource Package for step-by-step instructions on how to properly collect drinking water samples.

Schedule 12 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Microbiological Sampling and Testing Requirements.

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[2] If, for a period of 24 consecutive months, the presence of *E. coli*, fecal coliforms, or total coliforms are confirmed in drinking water samples on no more than one occasion (as described in Schedule 1 of the Drinking-Water Quality Standards Regulation, O. Reg. 169/03), then the sampling frequency may be reduced to: once every 2 weeks if not chlorinating or not chloraminating, or once every four weeks if chlorinating or chloraminating. However, if, on any two or more occasions drinking water samples confirm the presence of *E. coli*, fecal coliforms, or total coliforms in a 24-month period (see Schedule 1 of the Drinking-Water Quality Standards Regulation, O. Reg. 169/03), then you must immediately return to the original sampling frequency as described in this table. A written notice of the intention to reduce testing frequencies must also have been given to the Director at least 7 days before the reductions come into effect (refer to the Ministry's Web site at www.ene.gov.on.ca for the approved notice).

Who performs analysis for parameters

- A laboratory Licenced to test the parameter

By what date first samples must be taken

- June 1, 2003
- Within one week of commencing operation of new system where chlorine is not used.
- Within two weeks of commencing operation of new system where chlorine is used.

Note: If your drinking water system is not in operation for seven days or more, or if for such a period the system supplies water only to the private residences that are occupied by the owner of the system, members of the owner's family, employees or agents of the owner of the system or their families, you are not required to perform microbiological sampling and testing during that period. However, upon restarting your system you must sample and receive the results prior to supplying drinking water to users of the system.

What are my chemical sampling and testing requirements?

Schedule 14 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Chemical Sampling and Testing Requirements.

How often to collect samples (at a minimum)
Only during the operating season.
It varies depending on the parameter (see Schedule 14).

- All organic and inorganic parameters listed in Schedules 23 and 24 of O. Reg. 170/03: once every 60 months.
- Nitrate and nitrite: once every 3 months
- Sodium and Fluoride: every 60 months
- Lead: every 60 months
- Trihalomethanes (THMs) if chlorinating or chloraminating: once every 3 months

Where to collect samples
Point where water enters the distribution system or plumbing, except for:

- Lead: the sample must be taken from a remote point in the distribution system that is likely to have an elevated concentration of lead

Who performs analysis for parameters

- A laboratory Licenced to test the parameter

By what date first samples must be taken

- If testing was previously done under Regulations 459/00 or 505/01 or under an OWRA approval or order, within the period of time set by the Regulation after the date of the last sample;
- For new systems that have not done chemical testing described in the previous bullet, within the period of time set by the Regulation or 12 months, whichever is shorter.

Note: If your drinking water system is not operating for 60 or more consecutive days, or if for such a period the system supplies water only to the private residences that are occupied by the owner of the system, members of the owner's family, employees or agents of the owner of the system or their families, you are not required to perform chemical sampling and testing for nitrate and nitrite during that period.

Step 4: Provide A "Minimum Level of Treatment"

You have the flexibility to select any treatment technology that meets the performance-based criteria established in Schedule 2 of the Drinking–Water Systems Regulation (O. Reg. 170/03).
To meet the Regulation's mandatory treatment requirements, you must, at the very least, ensure that:

- wells are constructed and maintained to prevent surface water and other foreign materials from entering them;
- appropriate water treatment equipment is provided;
- water treatment equipment is operating whenever water is being supplied;
- water treatment equipment is operated as outlined in the Ministry's "Procedure for Disinfection of Drinking Water in Ontario";
- water treatment equipment is operated such that it achieves the design capabilities it is required to have;
- water treatment equipment is properly maintained;
- written operating instructions for the water treatment are kept near the equipment;
- adequate supplies of chemicals (or other materials necessary for operating the water treatment equipment) are: (a) clearly marked; (b) kept nearby the equipment; (c) separated from other chemicals and materials that are not used for the water treatment or distribution system;
- replacement parts (for those parts that need to be replaced periodically) are kept nearby; and
- treatment equipment is operated by a 'trained person'.

What are the minimum treatment requirements?

As a drinking water system owner, you must treat your water by the date specified in Schedule 2 of the Drinking-Water Systems Regulation (O. Reg. 170/03) for your system's category, unless you APPLY FOR RELIEF (see page 20).

What are the requirements for Groundwater Supplies?

- **Primary Disinfection**

You must ensure that you provide water treatment equipment that is capable of achieving, at all times, at least 99 per cent removal or inactivation of viruses in accordance with the Ministry of the Environment's "Procedure for Disinfection of Drinking Water in Ontario."

What are the requirements for Surface Water (or a GUDI[3] Source) Supplies?

- **Filtration and Primary Disinfection**

You must ensure that you provide water treatment equipment that is capable of achieving, at all times, removal or inactivation of :

- 99 per cent of *Cryptosporidium* oocysts,
- 99.9 per cent of *Giardia* cysts, and
- 99.99 per cent of viruses.

in accordance with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario".

If you are using UV or other non-chlorine-based primary disinfection equipment, you must ensure that the equipment has a feature that causes an alarm to sound in the building where the disinfection equipment is located, at a location where a person is present (if a person is not always present at the building where the disinfection equipment is located), and in any designated facilities served by the system when:

- equipment malfunctions;
- equipment loses power; or
- the disinfection equipment is not providing the appropriate level of disinfection.

If an alarm sounds, a "trained person" must be dispatched to take appropriate action and must arrive at the building where the disinfection equipment is located as soon as possible.

- **Secondary Disinfection**

Water treatment equipment must be capable of:

- secondary disinfection using chlorination or chloramination in accordance with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario"; and
- achieving at all locations within the distribution system a free chlorine residual of 0.2 mg/L (if chlorinating), or a combined chlorine residual of 1.0 mg/L (if chloraminating).

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[3] A groundwater source under the direct influence of surface water, as defined in O. Reg. 170/03. Refer to page 12 of Guide 1 (Does the Regulation Apply to Me?) for more information.

What are the deadlines for providing treatment equipment?

If your drinking water system was operating before O. Reg. 170/03 came into effect on June 1, 2003, the deadline for providing treatment equipment is:

- December 31, 2006, if your drinking water system obtains water from a surface water source or from a groundwater source.
- New systems must meet the treatment requirements immediately upon the commencement of operations

Note, the compliance dates specified in an existing approval under the *Ontario Water Resources Act* or orders in relation to a requirement to install treatment equipment take precedence over the compliance dates in the Regulation.

Do I need to submit written notice of my intentions?

If you have already notified the Ministry of the Environment of the completion of the *Engineering Evaluation Report* or submitted an application for relief from the requirements for provision of treatment equipment by July 1, 2006, then you do not need to submit this notice.

Otherwise, you must submit a written notice to the Ministry of the Environment Director on the approved submission by July 1, 2006, that includes one of the following three declarations:

1. You intend to comply with the requirements for treatment equipment by the specified deadline, OR
2. You intend to make an application for relief from some or all of the requirements for provision of treatment equipment (submit using DWIS).

Notify the Ministry using DWIS.

Written notice of your intent to comply with the treatment requirements or of your intent to apply for relief must be made using the approved notice -- *Notification of Intent to Comply with Treatment Requirements* -- which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

Schedule 2 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers minimum levels of treatment for drinking water systems.

Step 5: Have an Engineering Evaluation Report Completed and Submit Written Notice to the Ministry of the Environment

As the owner/operator of a regulated non-municipal seasonal residential drinking water system, you must ensure that a professional engineer certifies that the system is in compliance with the regulatory requirements.

The engineer must prepare an Engineering Evaluation Report for you. In turn, you must submit a notice, using DWIS, to the Ministry of the Environment within 7 days of the completion of the report. This certification has to be renewed every five years for surface water systems and every 10 years for groundwater systems.

These requirements replace the need to obtain a certificate of approval under the *Ontario Water Resources Act* approval.

The required *Engineering Evaluation Report Notice* is available through DWIS. Access it from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

What must my Engineering Evaluation Report cover and who must complete it?

The Report must certify that a professional engineer[4] has visited your drinking water system and include the engineer's opinion that all equipment needed to comply with the treatment requirements (in accordance with Schedule 2 of O. Reg. 170/03) is being provided, as well as all the equipment needed to comply with the operational checks provisions (in Schedules 6 and 9). As a minimum, in order to comply with Schedule 21 of the Regulation, a Report must:

1. specify the category of drinking water system under O. Reg. 170/03;
2. include the opinion of the engineer that all equipment has been provided in compliance with Schedules 2, 6, and 9;
3. set out the engineer's reasons for the opinion, along with the technical and other information he or she relied on in reaching that opinion; and
4. include a maintenance schedule that sets out requirements relating to the frequency at which the equipment must be inspected, tested and replaced.

You must ensure that the professional engineer that prepares the Engineering Evaluation Report has experience in sanitary engineering.

When is my Engineering Evaluation Report due?

If your drinking water system began operating on or after June 1, 2003, you must ensure that a professional engineer submits to you an Engineering Evaluation Report within 30 days of your new drinking water system beginning operation.

If your drinking water system began operating before June 1, 2003, you must ensure that a professional engineer submits to you an Engineering Evaluation Report:

> no later than January 30, 2007 for surface water systems or for groundwater systems.

Do not submit the Engineering Evaluation Report to the Ministry, but keep it on file to be made available upon request.

When must I submit a written notice to the Ministry?

Within seven (7) days after the date the Engineering Evaluation Report is required to be prepared, you must submit a written notice to the Ministry of the Environment Director using an approved notice in DWIS regarding the engineering evaluation report and include a copy of the engineer's opinion regarding your drinking water system's compliance.

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[4] According to section 1 of the Drinking-Water Systems Regulation (O. Reg. 170/03), "professional engineer" means a professional engineer as defined in the *Professional Engineers Act*

Notify the Ministry using DWIS

Written Notice must be made using the approved submission which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

- *Notice of Completion of an Engineering Evaluation Report for Existing System*
- *Notice of Completion of an Engineering Evaluation Report for New or Altered Systems*
- *Declaration of Professional Engineer to be Included Within an Engineering Evaluation Report*

When must I submit subsequent Engineering Evaluation Reports?

As a drinking water system owner, you must also ensure that a professional engineer prepares and submits to you Engineering Evaluation Reports not later than:

- five (5) years from the date your last Engineering Evaluation Report was prepared or required to be prepared (the earlier of the two) if your drinking water system obtains water from a surface water source.
- ten (10) years from the date your last Engineering Evaluation Report was prepared or required to be prepared (the earlier of the two) if your drinking water system obtains water from a groundwater source.
- If you alter your drinking water system ("alteration", as defined in the *Safe Drinking Water Act*, does not include repairs), then you must ensure that a professional engineer submits to you an Engineering Evaluation Report within 30 days of commencing operation of the altered system[5].

Notices are also required to be submitted to the Ministry at these times.

Schedule 21 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the preparation of Engineering Evaluation Reports and the submission of the required notices to the Ministry.

What exemptions are available?

- If you have already prepared and submitted to the Ministry of the Environment (MOE) Director an Engineering Evaluation Report under Regulation 505/01, you are exempt from preparing your first Engineering Evaluation Report and submitting a written notice to the MOE Director.
- If you have been granted an approval after August 1, 2000, under section 52 of the *Ontario Water Resources Act* (Certificate of Approval), you are exempt from preparing your first Engineering Evaluation Report and submitting a written notice to the MOE Director.
- However, if you have been granted an approval under *Ontario Water Resources Act* after August 1, 2000, you must have an engineer prepare a statement certifying that she or he has visited the system and that equipment required by Schedules 2, 6 and 9 of the Regulation is being provided (see Schedule 21 for more details). The Regulation provides that the *Ontario Water Resources Act* approval is revoked on the date the owner submits this statement to the Director, which means the drinking water system will no longer be subject to the requirements of the *Ontario Water Resources Act* approval – and will, instead, be regulated by the Drinking-Water Systems Regulation under the *Safe Drinking Water Act*.

If you have been granted relief in accordance with schedule 5 of O. Reg. 170/03, by the MOE Director from complying with all requirements to provide treatment equipment you are exempt from preparing an Engineering Evaluation Report and submitting this written notice to the MOE Director.

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[5] According to section 2 of the *Safe Drinking Water Act*, "alteration" includes the following, in respect of a drinking water system, but excludes repairs to the system: (1) an extension of the system, (2) a replacement of part of the system, (3) a fragmentation of the system, and (4) taking all or part of the system permanently out of service.

Who can operate my drinking water system and conduct operational tests?

Your system is defined as a **'non-municipal seasonal residential'** and therefore you require a 'trained person' under O.Reg. 170/03 to operate your drinking water system and conduct operational tests. A 'trained person' is a person who completes a Director-approved course every 36 months. More information about appropriate courses is provided on the next page. A person who holds a valid Water Treatment, Water Distribution, Water Distribution and Supply or a Limited Water Certificate is also considered a 'trained person'.

You are required to have a 'trained person' to operate your system by the date O.Reg. 170/03 requires you must have installed new treatment equipment. Drinking water systems in **the non-municipal seasonal residential category** must install treatment equipment by December 31, 2006 for both surface water sources and groundwater sources.

Since new systems must immediately comply with the treatment requirements, your new system will require having a trained person immediately as well.

What duties must be performed by a 'trained person'?

O. Reg. 170/03 requires that the following duties be performed by a trained person in systems such as yours:

- make all adjustments to the water treatment equipment;
- examine, within 72 hours after the tests are conducted, the results of continuous monitoring equipment;
- be promptly dispatched to the drinking water system if alarms sound as a result of equipment malfunction or loss of power or a test result which is above the maximum or below the minimum alarm standards established by the Regulation;
- perform all total chlorine residual, free chlorine residual, turbidity or fluoride testing required (A water quality analyst may also be used to carry out certain required operational tests such as these tests); and
- perform regular checks on water treatment equipment to confirm proper functioning.

What courses are available to qualify as a 'trained person'?

To verify that a person employed in a drinking water system is a "trained person", course certificates clearly indicating the date, course title, training organization and course duration must be maintained and be available upon request by the Ministry of the Environment.

The following courses have been approved by the Ministry of the Environment as meeting the requirements of a 'trained person':

- *Operation of Small Drinking Water Systems* (formerly titled Small Seasonal Drinking Water Systems) – correspondence course available through the Ministry of the Environment (905-796-2951)
- *Small Water Systems Operation and Maintenance* –Correspondence course from California State University (916-278-6142) www.owp.csus.edu

Step 6:
Have A 'Trained Person' Adjust Equipment and Conduct Operational Checks

Owners of drinking water systems that fall within the non-municipal seasonal residential category must have a 'trained person' as specified under the *Safe Drinking Water Act* to operate their system. The duties that the "trained person" must perform are listed in the main text on this page.

A 'trained person' designation is obtained through completion of a Director-approved course every three years. For more information go to www.oetc.on.ca. (Note: A 'certified operator' under O.Reg. 128/04 is automatically considered a 'trained person'.)

A water quality analyst may also be used to carry out certain required operational tests such as performing total chlorine residual, free chlorine residual, turbidity or fluoride testing.

A "water quality analyst" means a person who holds a water quality analyst's certificate, issued under O.Reg. 128/04. To qualify for this certificate a person must meet certain education and experience requirements and pass an exam for one of the courses recognized and approved by the Ministry of

(cont.)……

- *Water Treatment Plant Operation* – A correspondence course from California State University (916-278-6142) www.owp.csus.edu
- Any combination of American Water Works Association (AWWA) on-line learning courses totaling 18 hours or more (1-800-926-7337) www.awwa.org
- Any drinking water correspondence or related course offered through the Northern Alberta Institute of Technology (1-800-661-4077) www.nait.ab.ca

Any water treatment course offered through the following organizations provided the course is 1.8 Continuing Education Units (approximately 3 days) or more in duration; includes a final written test by the student, and includes topics on public health risks associated with untreated water, disinfection, sampling and testing procedures, emergency measures, and applicable regulations:

- any Ontario Community College drinking water course
- Canadian Enviro-Courses – (705-645-9570), www.cecourses.on.ca
- Electrical & Utilities Safety Association – (1-800-263-5024) www.eusa.on.ca
- Environmental Training Institute – (905-892-1177) http://mywebpage.netscape.com/etivc/eti.html
- Lexicon Environmental Consulting – (905-829-9055), e-mail: lexicon@.ca.inter.net
- Ontario Good Roads Association – (905-795-2555) www.municipalengineers.on.ca
- Tangible Skills Training – (905-878-1664) www.tangibleskills.ca
- Technical Learning Courses – (519-740-1222) www.hometown.aol.ca/Tlearncourses/tlcourse.htm
- Ontario Water Operators Training Centre – (519-255-2888, ext. 816) www.owotc.com

Other courses may be approved by the Ministry upon review of the course content, duration, objectives and training manual. For further information go to www.oetc.on.ca

What courses are recognized and approved by the Ministry of the Environment for Water Quality Analysts?

For information on the requirements for a Water Quality Analyst, please refer to the *Certification Guide for Operators and Water Quality Analysts of Drinking Water Systems*. This guide covers how to obtain a Water Quality Analyst Certificate and the requirements for certificate renewal. You can access this guide by going to the Ministry of the Environment web site at www.ene.gov.on.ca, clicking on the Water section and going to Research and Publications.

the Environment, outlined in *the Certification Guide for Operators and Water Quality Analysts of Drinking Water Systems* which you can access by going to www.ene.gov.on.ca, clicking on the Water section and going to Research and Publications.

What operational checks must I undertake?

In accordance with Schedule 9 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must ensure that a trained person performs a regular operational check to ensure that all water treatment equipment is properly functioning, as specified in the maintenance schedule of the Engineer's Evaluation Report.

You must ensure that a trained person or water quality analyst collects samples and tests your water for turbidity, and free residual chlorine or combined chlorine residual, if applicable. Operational checks for turbidity and chlorine residual should be conducted on-site.

Whenever a sample is taken, the person taking the sample must record the date and time the sample was taken, the location the sample was taken, the name of the person who performed the test, and the results of the test. In addition, the record should include the date and time the sample was tested and the results of the tests (and the name of the person who conducted the test, if this is a different person from the person who took the sample).

Note: You may have a person other than a trained person or water quality analyst perform operational checks, but only until your treatment deadline comes into effect (December 31, 2006 for both surface water sources, and groundwater sources).

Note: If your drinking water system is not operating for 60 or more consecutive days or if for such a period the system supplies water only to the private residences that are occupied by the owner of the system, members of the owner's family, employees or agents of the owner of the system or their families, you are not required to perform operational checks on days during that period.

How do I test for turbidity? (at least once a day)

Surface Water Using Filtration:
If continuous monitoring equipment is required on filtration equipment (i.e. direst filtration, conventional filtration, Diatomaceous Earth Filtration and membrane filtration – see procedure for disinfection) to comply with the treatment performance requirements of Schedule 2, you must ensure that sampling and testing for turbidity is conducted by continuous monitoring equipment on each filter effluent line. If continuous monitoring equipment is not required, (if you use slow sand filters or cartridge filters – see procedure for disinfection), then you must ensure that a daily water sample is taken on each filter effluent line and tested for turbidity.

Other:
At least one sample per month shall be taken and immediately tested for turbidity before the raw water enters the treatment system. When testing for turbidity, a turbidity meter that measures turbidity in Nephelometric Turbidity Units (NTUs) must be used. See Schedule 6 of the Regulation.

Step 7:
Undertake Operational Checks

Please note that every time a water sample is collected for microbiological testing, a measurement of free chlorine residual (where chlorination is provided) or combined chlorine residual (where chloramination is provided) must be conducted at the same time and same location and noted on the *Laboratory Chain of Custody Form*. This measurement of chlorine residual taken with a microbiological sample can satisfy the daily requirement to test for chlorine residual under the Regulation.

Schedule 9 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers operational checks.

How do I test for residual chlorine?

Primary Disinfection – Chlorination:
A sample shall be collected at least once per day and immediately tested for free chlorine residual in the treatment process at the end of contact time as required in the Ministry's "Procedure for Disinfection of Drinking Water in Ontario."

Secondary Disinfection – Chlorinating or Chloramination:
Samples shall be collected from the distribution system, at least once every day and immediately tested for free chlorine residual or combined chlorine residual.

What exception exists for seasonal residential systems?

Seasonal residential systems are not required to conduct operational checks during the period of 60 or more consecutive days when the system is not in operation

What are my monitoring and reporting requirements?

Compliance Calendar for Periodic Monitoring & Reporting Requirements

Periodic monitoring and reporting requirements for non-municipal seasonal residential drinking water systems subject to O. Reg. 170/03 (Drinking-Water Systems)

FREQUENCY	MONITORING WATER QUALITY AND PROPER FUNCTIONING OF EQUIPMENT	PREPARING AND RECEIVING RECORDS/REPORTS	DISTRIBUTING AND RETAINING (ON-FILE) REPORTS/RECORDS
At least once a day	**Measure free chlorine residual (if using chlorination) or combined chlorine residual (if using chloramination)** **Primary Disinfection** ◆ Ensure that a water sample is collected and tested immediately for free or combined chlorine residual at least once every day in the treatment process at the end of contact time in accordance with the Ministry's *"Procedure for Disinfection of Drinking Water in Ontario."* ◆ If the system uses chloramination, sampling and testing for combined chlorine residual is to be carried out by continuous monitoring equipment. **Secondary Disinfection** ◆ Ensure that a distribution sample is taken at least once every day and is tested immediately for free chlorine residual (if system provides chlorination) or combined chlorine residual (if the system provides chloramination). (Reg. Schedule 9)	For each sample, make a record of the date and time the sample was tested, the name of person who performed the test and the test results and note them on the *Laboratory Chain of Custody Form* if the test was done on a microbiological sample submitted to a Licenced laboratory (Reg. Schedule 6)	◆ Keep every record made on free chlorine residual or combined chlorine residual tests for at least 5 years. (Reg. Section 13)

What are my monitoring and reporting requirements?

Compliance Calendar for Periodic Monitoring & Reporting Requirements

Periodic monitoring and reporting requirements for non-municipal seasonal residential drinking water systems subject to O. Reg. 170/03 (Drinking-Water Systems)

FREQUENCY	MONITORING WATER QUALITY AND PROPER FUNCTIONING OF EQUIPMENT	PREPARING AND RECEIVING RECORDS/REPORTS	DISTRIBUTING AND RETAINING (ON-FILE) REPORTS/RECORDS
Surface Water Using Filtration Continuously, if using continuous monitoring equipment At least once a day if not required to use continuous monitoring equipment	**Measure turbidity** **Seasonal Residential** **Surface Water Using Filtration** ◆ If continuous monitoring equipment is required, ensure the sampling and testing for turbidity is conducted by continuous monitoring equipment on each filter effluent line. ◆ If continuous monitoring is not required, at least one sample per day shall be taken and immediately tested for turbidity on each filter effluent line. Other: ◆ At least one sample per month must be taken and immediately tested for turbidity before the raw water enters the treatment system. (Reg. Schedule 9)	◆ For each sample taken, make a record of the date and time the sample was tested, the name of person who performed the test and the test results. (Reg. Schedule 6)	◆ Keep every record made on turbidity tests for at least 5 years. (Reg. Section 13)
Once every two weeks if chlorinating or chloraminating Once a week if not chlorinating or chloraminating	**Test for microbiological parameters in treated water** Collect treated samples from the distribution system or plumbing. Send samples to a laboratory Licenced to test (i) *E. coli* or fecal coliforms, (ii) total coliforms, and (iii) HPC. If you serve over 100 service connections, collect one additional distribution sample every month for every 100 connections. (Reg. Schedule 12)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 5 years. (Reg. Section 13)
Frequency specified in maintenance schedule of Engineer's Evaluation Report	**Check of Treatment Equipment** ◆ Ensure that a trained person checks all water treatment equipment to confirm that it is functioning properly. (Reg. Schedule 9)	◆ For each equipment check, make a record of the date and time, the name of the person who performed it, and the results. (Reg. Schedule 9)	◆ Keep every record of an Operational Check made for at least 5 years. (Reg. Section 13)

What are my monitoring and reporting requirements?

Compliance Calendar for Periodic Monitoring & Reporting Requirements

Periodic monitoring and reporting requirements for non-municipal seasonal residential drinking water systems subject to O. Reg. 170/03 (Drinking-Water Systems)

FREQUENCY	MONITORING WATER QUALITY AND PROPER FUNCTIONING OF EQUIPMENT	PREPARING AND RECEIVING RECORDS/REPORTS	DISTRIBUTING AND RETAINING (ON-FILE) REPORTS/RECORDS
Once a month	**Test for coliforms in raw water** ◆ Collect raw drinking water samples from the untreated water source; and IF using groundwater, then from each well. ◆ Send samples to a laboratory Licenced to test (i) *E. coli* or fecal coliforms and (ii) total coliforms. (Reg. Schedule 12)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 5 years. (Reg. Section 13)
Every 3 months	**Test for Nitrate and Nitrite** ◆ Send samples to a Licenced laboratory for testing. (Reg. Schedule 14)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Every 5 years	**Test for lead** ◆ Collect samples from the point in the distribution system that is likely to have an elevated concentration of lead. Send samples to a Licenced laboratory for testing. (Reg. Schedule 14)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Every 5 years	**Test for all organic and inorganic parameters listed in Schedules 23 and 24 of the Drinking-Water Systems Regulation** ◆ Collect samples from the point where water enters the distribution system or plumbing. Send samples to a Licenced laboratory for testing. (Reg. Schedule 14)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Every 5 years	**Test for sodium and fluoride** Collect samples from the point where water enters the distribution system or plumbing. Send samples to a Licenced laboratory for testing. Note: Fluoride samples can be collected and tested by a "trained person" or by a water quality analyst. (Reg. Schedule 14)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)

What are my monitoring and reporting requirements?

Compliance Calendar for Periodic Monitoring & Reporting Requirements

Periodic monitoring and reporting requirements for non-municipal seasonal residential drinking water systems subject to O. Reg. 170/03 (Drinking-Water Systems)

FREQUENCY	MONITORING WATER QUALITY AND PROPER FUNCTIONING OF EQUIPMENT	PREPARING AND RECEIVING RECORDS/REPORTS	DISTRIBUTING AND RETAINING (ON-FILE) REPORTS/RECORDS
Once a year	**Prepare Annual Report**	♦ Prepare and submit an annual report using the format provided by the Ministry of the Environment through DWIS. (Reg. Section 11)	♦ Send annual report to: 1. Electronically to the Ministry; 2. Every person who requests a copy. ♦ Keep copies of the annual report for at least 5 years. (Reg. Section 13)
Every 5 years (surface water source) Every 10 years (groundwater source)	**Prepare an Engineering Evaluation Report and submit a written notice to the Ministry** (within 7 days after the engineering evaluation report is required to be prepared). (Reg. Schedule 21)	♦ This written notice must include a copy of an engineer's written opinion that all equipment required for treatment (schedule 2) and operational checks (schedules 6, 9) is being provided and the reasons for the opinion. (Reg. Schedule 21)	♦ Keep your Engineering Evaluation Report for at least 15 years. (Reg. Section 13)

Step 8: Determine if You Can Apply for Full Relief from Requiring Any Treatment

As recommended by Commissioner O'Connor, the Drinking-Water Systems Regulation (O. Reg. 170/03) allows certain owners to apply for an approval from the Ministry of the Environment relieving them of the requirement to provide minimum treatment. This relief is only allowed, however, if the owner is able to demonstrate that the safety of the drinking water provided by the owner's system meets acceptable risk-based standards. This process is not available to owners of drinking water systems that obtain their water from a surface water source, including groundwater systems under the influence of surface water.

Those who wish to go through this process have to make an application that provides a comprehensive range of information based on a risk analysis and management plan.

Who can apply for full relief from treatment requirements?

Owners of a non-municipal drinking water system that obtains water from a groundwater source can apply for relief from all treatment requirements (found in Schedule 2 of the Drinking-Water Systems Regulation).

How do I apply?

Drinking water system owners who wish to apply for relief must obtain the services of a professional engineer in order to make the necessary assessments required by the application. The engineer must follow the Ministry of the Environment's "Guide for Applying for Approvals Related to Municipal and Non-Municipal Drinking Water Systems," and must complete the appropriate submissions.

Submissions or activities that are required to be carried out by the engineer as part of an application process include:

- a written statement that confirms that he or she has requested all information related to the drinking water system from the local health unit, has consulted with the Local Medical Officer of Health about potential health issues or concerns related to the drinking water system, and has set out in the statement any issues or concerns raised;
- a characterization of the drinking water system's raw water supply that includes a minimum of 24 CONSECUTIVE months microbiological sample history, a statement concluding that there are no significant and rapid shifts in chemical and physical characteristics that indicate surface water influence (that is, pH, turbidity, temperature, nitrate, nitrite, and conductivity), and copies of any other records that show past evidence of surface water contamination (such as, presence of viruses, chlorophyll a, protozoan cysts, macro-organisms);
- surveys and analyses prepared by or under the supervision of the engineer that deal with the potential risks of microbiological contamination related to each of the following: well construction and well-head protection, the well-head vicinity and recharge zone, and distribution system and plumbing; and
- a proposed management plan prepared by or under the supervision of the engineer that provides guidance for operations related to preventing, reducing and managing microbiological risks[6].

Notify the Ministry using DWIS

Notification of your intent to apply for regulatory relief must be made using the approved notice - *Notification of Intent to Apply for Relief* - which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

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[6] A proposed management plan for preventing, reducing and managing microbiological risks should include the following components: (1) operating procedures relating to the maintenance activities at the start of an operating season and relating to routine flushing and disinfecting activities (you must also include written operating procedures relating to increased monitoring activities after adverse weather events such as heavy rainfall or floods); (2) logs relating to samples taken (include location, sample times, signatures, and test results); (3) a protocol for notification (and a contact list) that clearly describes the steps to notify the users of the system, the Ministry of the Environment, and the Local Medical Officer of Health upon adverse events and the importance of keeping contact lists up to date; (4) a procedure for corrective action upon adverse events that is consistent with the Ministry procedure entitled, "Procedure For Corrective Action for Systems Not Currently Using Chlorine"; and (5) a procedure for making records, in order to summarize any corrective actions taken, the results of the corrective action, and the resolution of the issues that gave rise to the corrective actions.

Must I consult with the users of my system?

Ensure that the occupants of all private residences served by the system are notified of the application and given reasonable opportunity to make comments. A written summary of those comments and responses must also be prepared before the application for relief is made to the Ministry of the Environment.

What exemptions from providing treatment, testing, etc. exist under section 8?

You may be exempted from regulatory requirements according to section 8, if your drinking water system does not use electricity. In addition, you must:

- post appropriate warning notices;
- check your warning notices once a week to make sure they are in compliance with O. Reg. 170/03;
- disconnect all drinking water fountains to render them inoperable; and
- provide written notice to the Ministry of the Environment Director that the above steps have been taken, using the approved submission in DWIS.

Schedule 5 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the application for full relief from all treatment requirements.

What exemptions exist for residential systems (under section 5)?

If you own a residential system that obtains all its water from a drinking water system that is subject to O. Reg. 170/03, and that provides secondary disinfection in accordance with the Regulation, and the owner of the system providing the water has agreed in writing to ensure that (1) the secondary disinfection equipment is operated so that at all times and at all locations within your distribution system the required free or combined chlorine residual is maintained (whichever applies), and (2) to sample and test the water in the distribution system of the system that obtains the water as if it were part of the distribution system of the system providing the water, you are exempt from most of the requirements of O. Reg. 170/03. If you do not have such an agreement, certain sampling and monitoring activities of the water in your distribution system still apply to you as the owner of that system. Refer to section 5 of the Regulation for more details about these requirements.

Step 9:
Notify Authorities of Adverse Test Results and Other Problems

The Drinking-Water Systems Regulation (O. Reg. 170/03) continues to require mandatory reporting of adverse test results to both the Local Medical Officer of Health and the Ministry of the Environment.

Here is how the notification of an adverse test result works:

☐ The Licenced laboratory identifies an adverse result.

☐ The Licenced laboratory notifies the system owner, the Ministry's Spills Action Centre (SAC), and the Local Medical Officer of Health (LMOH).

☐ The owner notifies SAC and LMOH.

What adverse test results and other problems must I report?

The following adverse test results must be reported immediately to the Ministry of the Environment's Spills Action Centre and the Local Medical Officer of Health in accordance with section 18 of the *Safe Drinking Water Act* (SDWA):

- a result that exceeds any of the standards listed in Schedules 1, 2 or 3 of the Ontario Drinking-Water Quality Standards Regulation;
- a result indicating the presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci* in a sample of drinking water;
- a result indicating the presence of a pesticide not listed in Schedule 2 of the Ontario Drinking-Water Quality Standards Regulation is detected in a sample of drinking water;
- if chlorination is used, a result indicating that the concentration of free chlorine residual is less than 0.05 mg/L in a distribution sample;
- if chloramination is used, a result indicating that the concentration of combined chlorine residual is less than 0.25 mg/L in a distribution sample;
- a test result exceeding the maximum concentration for a parameter identified under an approval or order as a health-related parameter;
- if filtration is required, a result indicating the turbidity is more than 1.0 NTU in filter effluent; if grab sampling or, if continuously monitoring, more than 1.0 NTU in 2 consecutive filter effluent samples taken 15 minutes apart (report only once per 24 hours);
- a result indicating the sodium concentration exceeds 20 mg/L in a sample of drinking water (report only once per 5 years); or
- a result indicating the fluoride concentration exceeds 1.5 mg/L in a sample of drinking water (report only once per 5 years).

In addition, any observation that indicates that a drinking water system that provides (or is required to provide) disinfection is directing water that has not been properly disinfected to users, must also be reported immediately to the Ministry's Spills Action Centre and the Local Medical Officer of Health, in accordance with section 18 of the SDWA.

Who must I notify and how must I notify them of these problems?

Step 1, Make immediate report (by telephone or in person).
Immediately report the adverse result or other problem to the Ministry's Spills Action Centre (telephone 1-800-268-6060) and the Local Medical Officer of Health, by speaking with someone in person or on the telephone.

When you make a report, you must specify the adverse test result or the observation that your drinking water system has not adequately disinfected water directed to users of the system, and the action or appropriate corrective action that is being taken.

Step 2, Deliver written notice.
You must deliver written notice within 24 hours of giving the immediate verbal notice using the approved notice available through DWIS. The written notice must indicate the problem and the appropriate corrective action that is being taken. Send the written notice to:

- the Local Medical Officer of Health; and
- the Ministry of the Environment's (MOE) Spills Action Centre (Submit through DWIS).

Step 3, Deliver follow-up notice of action taken.
You must deliver follow-up written notice within 7 days of resolving the issue that gave rise to the first notice using the approved notice available through DWIS. The follow-up written notice must summarize the action taken and the results achieved to the Local Medical Officer of Health, and the MOE Spills Action Centre.

Use the approved notices available in DWIS

Written notice of any adverse test results or other problems, followed by a second notice detailing the resolution of the problem, must be made using the approved notices, which are to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

- *Written Notice of Adverse Test Results and Other Problems*
- *Notice of Issue Resolution at Drinking Water Systems* (AWQI-NR)

Submit the written notice to the Spills Action Centre by going to the Ministry's website, then accessing DWIS. Log-in by entering your user name and password, and select the appropriate notice.

Within 24 hours of giving the required immediate verbal notice of any problem, drinking water system owners must also submit the notice to the Local Medical Officer of Health.

Once the issue is resolved, complete the *Notice of Issue Resolution at Drinking Water Systems*. Submit it to the Ministry through DWIS and submit another copy to the Local Medical Officer of Health.

Step 10: Take Corrective Action

In the event that your system experiences an adverse test result or you observe that your system is not properly disinfecting water that is being directed to users, not only must you notify the appropriate authorities (including the Ministry of the Environment and the Local Medical Officer of Health), but you must also take corrective action to protect the users of your water. There are different types of corrective actions depending on the type of water quality problem you may find in your samples. Schedule 18 of the Drinking-Water Systems Regulation (O. Reg. 170/03) describes different corrective actions that are required following certain adverse test results or observation of certain problems.

What Corrective Actions Must I Take When Adverse Test Results are Received or Other Problems are Observed?

(Schedule 18 of O. Reg. 170/03)

Adverse test result or other problem	Water use	Treatment	Sampling and testing	Consult with …
Water not disinfected properly has been directed to users	Take steps to notify users to use an alternate source of drinking water or to bring water to a rapid rolling boil for one minute before use.	Restore the disinfection.		Local Medical Officer of Health
If filtration is required, the turbidity in filter effluent is more than 1.0 NTU	Take steps to notify users to use an alternate source of drinking water or to bring water to a rapid rolling boil for one minute before use, if problem can not be resolved quickly.	1. Check equipment, backwash or replace filters, and correct any other faulty processes. 2. If resample confirms exceedance, follow manufacturer's servicing recommendations and flush the distribution system and plumbing.		Local Medical Officer of Health
If chlorination is used, free chlorine residual is less than 0.05 mg/L in a distribution sample	Take steps to notify users to use an alternate source of drinking water or to bring water to a rapid rolling boil for one minute before use, if problem can not be resolved quickly.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, on following page).	Test to ensure that a 0.2 chlorine residual is achieved.	Local Medical Officer of Health
E. coli or fecal coliform detected from any one sample.	Take steps to notify users to use an alternate source of drinking water or to boil water for one minute before use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, on following page).	Immediately resample and test (see note 2, on following page). Continue corrective action until *E. coli* or fecal coliforms are no longer detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health

Resample test confirms total coliforms (but not fecal coliforms).	Take steps to notify users to use an alternate source of drinking water or to boil water for one minute before use.	As above, increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until total coliforms are no longer detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms more than 200 Background CFU/100mL (but not fecal coliforms) on a total coliform membrane filter.	Consult with Local Medical Officer of Health on water use.	As above, increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until less than 200 Background CFUs/100 mL are detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms more than 500 CFU/mL (but not fecal coliforms) on a heterotrophic plate count (HPC).	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until less than 500 CFUs/mL are detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci*.	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci* are not detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms exceedance of a chemical and radiological parameter listed in Schedule 2 or 3 of the Ontario Drinking-Water Quality Standards Regulation (O. Reg. 169/03)	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms that a pesticide NOT listed in Schedule 2 of the Ontario Drinking-Water Quality Standards Regulation (O. Reg. 169/03) is detected.	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms exceedance of the maximum concentration for a parameter identified under an approval or order as a health-related parameter	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing..		Local Medical Officer of Health
Resample test confirms a sodium concentration that exceeds 20 mg/L and a report has not been made in the previous 5 years	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health

Note 1: If you are not currently using chlorine, take the corrective action as outlined in the Ministry's "Procedure for Corrective Action for Systems Not Currently Using Chlorine" (available on the Ministry's Web site, www.ene.gov.on.ca).

Note 2: "resample and test" (as defined in O. Reg. 170/03) for a microbiological parameter means that you must immediately collect and transport a set of at least 3 drinking water samples for the parameter, which caused the adverse water quality to your Licenced laboratory for analysis. The first sample must be from the same location as the sample that gave rise to the corrective action. The second sample must be from a location that is a significant distance upstream from the location of the adverse result, where reasonably possible, and the third sample must be from a location that is a significant distance downstream from the adverse result, where reasonably possible.

To "resample and test" for a parameter that is not a microbiological parameter means that you must collect and transport a water sample for the parameter which caused the adverse water quality from the same location as the sample that gave rise to the corrective action to your Licenced laboratory for analysis.

When is it necessary to post a warning notice?

Under Schedule 19 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must post a warning notice:

- if you are not presently in compliance with microbiological sampling and testing requirements of Schedule 12;
- if you did not carry out the appropriate corrective action required under schedule 18; and/or
- if you must, as a corrective action, notify all users to use an alternate source of water or to boil the water for at least one minute before using.

Warning Notices do NOT provide a regulatory exemption! The warning notices required to be posted in accordance with Schedule 19 are a temporary and additional requirement meant to protect public health, the fundamental objective of this regulation. They do not relieve the owner of any regulatory requirements. The owner must still comply with the requirements of Schedule 11, 12 or 18 as soon as possible despite posting a warning notice.

Where do I post the warning notice?

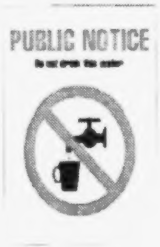
Post the notice in a prominent location where it is likely to be seen by those using water from the system. If you fail to post a warning notice at your drinking water system, a provincial officer or public health inspector may do so instead.

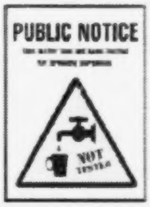
What must the warning notice say and where can I obtain them?

Warning notices must be in a form provided by or approved by the Director. There are two warning notices available from the Ministry of the Environment for the purposes of posting warning notices of potential problems. The proper notice must be used according to the specific situation described above. You may also wish to indicate where an alternate source of drinking water can be obtained, if applicable.

Use the approved notice(s).

You must post warning notices upon receiving notification of the following adverse test results or adverse conditions: improper disinfection (18-2), turbidity (18-3), chlorine residual (18-4), *Escherichia coli* (18-5), AND if corrective action has not been taken. For copies of "Warning Notice of Non-Compliance of O. Reg. 170/03", contact the Ministry of the Environment's Public Information Centre at 1-800-565-4923 or (416) 325-4000.





Step 11:

Post Warning Notices of Potential Problems

Owners are required to post a warning notice if you are not currently complying with the microbiological testing regime required by the Drinking-Water Systems Regulation (O. Reg. 170/03) or if you did not carry out the necessary corrective actions for some reason. These warning notices have to be posted in prominent locations to alert users of the system.

For copies of warning notices, contact the Public Information Centre at 1-800-565-4923 or (416) 325-4000.

Warning notices do NOT exempt you from the regulation!

The warning notices referred to on this page are a temporary and additional requirement to protect public health. They do not relieve the drinking water system owner of any regulatory requirements. The owner must still comply with the requirements as soon as possible despite posting a warning notice.

Schedule 19 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the posting of warning notices.

Step 12: Make Information Available to the Public

Under section 12 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must make certain reports and documents available on site at each drinking water system, so that interested persons may read them on request, free of charge, during normal business hours.

Section 12 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the information that must be made available.

What reports and documents must I make available to the public?

- Every test result (not older than two years) required by O. Reg. 170/03, or O. Reg. 459/00 or under an approval or order;
- Every approval and order issued (not older than two years) that applies to your drinking water system and that is still in effect, if it was issued after January 1, 2001;
- Every annual report prepared under Section 11 of O. Reg. 170/03, or under O. Reg. 459/00, or under O. Reg. 505/01 for the past two years;
- A copy of the Drinking-Water Systems Regulation (O. Reg. 170/03); and
- A copy of every Engineering Evaluation Report for the past two years.

Step 13:
Prepare and Submit an Annual Report

In order that the public has access to information on the status of drinking water, an Annual Report on the operation of your drinking water system must be prepared using a prescribed format, made available to the public and submitted to the Ministry of the Environment.

The Annual Report must cover the period from November 1st of the previous year through to October 31st of the current year, and the report must be submitted by December 31st of each year.

The annual report is to be submitted electronically through DWIS.

Section 11 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Annuals Reports.

How do I prepare my Annual Report?

To make the preparation of this report as easy as possible, the Ministry of the Environment has designed an Annual Report template which MUST be used and is available on the Ministry's website through DWIS. The following is a summary of the type of information you will need to complete the Ministry's Annual Report template:

- information on your drinking water system (i.e., name and address of the drinking water system and the name and address of the owner of the drinking water system, the category of the drinking water system, the name of the local Public Health Unit, the population being served, public facilities served and the pumping capacity and a list of the water treatment chemicals used by the system during the period covered by the report);
- information on your drinking water source (groundwater, surface water or groundwater under the direct influence of surface water);
- information on the number of adverse test results during the reporting period for microbiological, chemical, chlorine residual and turbidity;
- summary of microbiological and chemical results;
- information on parameters not required during the reporting period;
- information on additional testing and sampling carried out in accordance with the requirement of an approval or an order;
- description of the corrective actions undertaken under Schedule 18;
- information on major expenses incurred during the period covered by the Annual Report (such as the cost of treatment equipment, instrumentation for measuring chlorine levels, etc.); and
- information on how the Annual Report was shared with drinking water users (for example, a copy of the Annual Report was given to every person who requested it).

Use the approved format available in DWIS.

- Submitting the Annual Report.

You must use the Ministry's Annual Report Template, which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

When is the first Annual Report due?

- If a seasonal residential system was required to submit a quarterly report under O. Reg. 459/00, the first report was due December 31, 2003, and shall have covered the period from April 1, 2003, to October 31, 2003.
- If a new seasonal residential system not subject to O. Reg. 459/00, then the first report was due December 31, 2003, and should have covered the period from June 1, 2003, to October 31, 2003.

Note, if your drinking water system is connected to and receives all of its drinking water from another drinking water system, the owner of the drinking water system from which the water is obtained must ensure that the owner of the connected drinking water system is given a copy of the Annual Report.

Step 14:
Retain Required Reports and Documents

Under section 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03), drinking water system owners and Licenced laboratories must keep copies of certain reports and documents on file.

If the Ministry of the Environment Director or provincial officer requests your records, you must send them within the period requested.

Section 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers record keeping.

What records must I retain? And for how long?

As a drinking water system owner, you must keep copies of the following records for at least five years:

- Every record or report of test results for microbiological parameters and operational checks, as required under section 7, Schedules 6-12 or sections 18-5 to 18-9 of Schedule 18 of O. Reg. 170/03.
- Every annual report prepared under Section 11 of O. Reg. 170/03.
- Every record or report related to a test result under an approval or order, unless the record or report relates to an organic or inorganic parameter listed in Schedule 23 or 24 of O. Reg. 170/03 or a parameter listed in Schedule 3 of the Ontario Drinking-Water Quality Standards Regulation (O. Reg. 169/03).
- Every record or report of test results for microbiological parameters prepared under section 7, and clause 9(b) of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003, or tests prepared under section 7, 8 and 12 of O. Reg. 505/01 before the Regulation was revoked on June 1, 2003.
- Every annual report prepared under section 12 of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003, or reports prepared under section 15 of O. Reg. 505/01 before the Regulation was revoked on June 1, 2003.

As a drinking water system owner, you must keep copies of the following records for at least 15 years:

- Every record or report of test results for chemical parameters as required by Schedule 14 (Seasonal Residential Systems), and sections 18-10 to 18-13 of Schedule 18 of the Drinking-Water Systems Regulation.
- Every record or report related to a test result under an approval or order if the record or report relates to an organic or inorganic parameter listed in Schedule 23 or 24 of O. Reg. 170/03 or a parameter listed in Schedule 3 of the Ontario Drinking-Water Quality Standards Regulation (Reg. 169/03).
- Every Engineering Evaluation Report prepared under Schedule 21 of O. Reg. 170/03.
- Every record or report of test results for chemical parameters prepared under section 7 and clause 9(a) of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003, or tests prepared under section 9 of O. Reg. 505/01 before the Regulation was revoked on June 1, 2003.
- Every report relating to the drinking water system's raw water supply prepared under paragraph 7 of subsection 2(2) (written report concluding that the system's raw water is groundwater under the direct influence of surface water) or subsection 2(3)(a) (written report prepared after August 1, 2000, concluding that the raw water supply is not groundwater under the direct influence of surface water).
- If the owner gave the Director a written statement by a professional engineer under subsection 21-2 (3) of Schedule 21, a copy of the OWRA approval referred to in that section.

This is the second guide in a four-guide kit.
The Ontario Ministry of the Environment has prepared a series of guides for the four categories of regulated, non-municipal drinking water systems. If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, download an electronic version from the Ministry's website at www.ene.gov.on.ca, or call our Public Information Centre at 1-800-565-4923. See the back page of this guide for other sources of information.

Guide 1, Does the Regulation Apply to Me?

Guides 2A-2D, A Guide for Regulated, Non-Municipal Drinking Water Systems.

- Guide 2A, Non-Municipal Seasonal Residential Systems
- Guide 2B, Non-Municipal Year-Round Residential Systems
- Guide 2C, Small Non-Municipal Non-Residential Systems
- Guide 2D, Large Non-Municipal Non-Residential Systems

Guide 3, How to Collect Drinking Water samples

Guide 4, Glossary of Terms

Note: reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03), the *Safe Drinking Water Act*, 2002, and the other related regulations and procedures to ascertain an owner/operator's specific legal requirements. See back cover for details.

Obtain the Specific Information You Need to Meet Your Regulatory Responsibilities

The Kit for Regulated Non-Municipal Drinking Water Systems contains a number of components that, together, are designed as a support tool to help owners and operators of regulated systems deliver safe, clean drinking water. Titles in this resource package will help you:

- ☐ determine whether the system you own or operate is regulated under O. Reg. 170/03;
- ☐ provide more detailed information for each of the four categories of regulated, non-municipal drinking water systems;
- ☐ show you how to collect samples and have them analyzed; and
- ☐ provide definitions of key technical and water management terms.

If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, or download an electronic version from the Ministry's website at www.ene.gov.on.ca.

How do I obtain the documents and contact information I need?

How can I obtain a copy of the Drinking-Water Systems Regulation and additional information on my regulatory responsibilities?	Visit the Ministry website at www.ene.gov.on.ca, click on "Water" then scroll down the page and click on "Drinking-Water Systems Regulation – Information Page" (http://www.ene.gov.on.ca/envision/water/sdwa/dwsr.htm). This will take you to a full page of links to key documents, technical updates, laboratory licencing information, legislation and regulations, forms, general information and related documents. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
How do I find a Licenced laboratory for analyzing my drinking water samples?	Check the Ministry website for a list of Laboratories Licenced to perform drinking water testing under the *Safe Drinking Water Act*, available at: http://www.ene.gov.on.ca/envision/water/sdwa/Licencedlabs..htm. You can also call the Ministry of the Environment Laboratory Licencing Administrator at 416-235-6370.
How do I contact the Local Medical Officer of Health or the Public Health Unit for my community?	Check the "Blue Pages", under the heading "Health", in your local telephone directory for the listing of your public health unit. You can also visit the website of the Ministry of Health and Long-Term Care (MOHLTC) at www.health.gov.on.ca, or call the MOHLTC info-line at 1-800-268-1154, or 416-314-5518 in Toronto.
Where can I find the nearest local or regional office of the Ministry of the Environment?	Check the "Blue Pages", under the heading "Environment", in your local telephone directory. You can also visit the Ministry website at www.ene.gov.on.ca and look under the heading "About the Ministry" on the home page. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
Where can I find more information on training and certification of system operators?	Contact the Ontario Environmental Training Consortium (OETC) through its website at www.oetc.on.ca, or by telephone at 905-796-2851. For more information, the new Certification of Drinking-Water System Operators and Water Quality Analysts Regulation (O. Reg. 128/04) is available at: http://www.e-laws.gov.on.ca/DBLaws/Regs/English/040128_e.htm.

The Ontario Drinking-Water Systems Regulation
(O.Reg. 170/03)

Guide 2B:
What are my responsibilities under O.Reg. 170/03?

A Guide for Owners and Operators of **Non-Municipal Year-Round Residential Drinking Water Systems**

Ontario Ministry of the Environment
December 2004

Protecting our environment. Ontario

This publication is provided for information purposes only.

This guide is the second guide of a four-guide kit designed to assist owners and operators of regulated non-municipal drinking water systems more fully understand their responsibilities in delivering safe, clean drinking water. However, readers are advised against using this document for compliance purposes. Reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03) and the *Safe Drinking Water Act, 2002* to ascertain an owner/operator's specific legal requirements and to determine whether or not a system is in compliance. The Act and its regulations may be obtained from Ontario's e-laws website at www.e-laws.gov.on.ca.

This Guide is for you if you are an owner or operator of a non-municipal drinking water system that serves:

- an apartment building, private subdivision, condominium, townhouse complex, mobile home park or year round cottage development with six or more private residences; or
- a year round trailer park or campground with six or more service connections.

This Guide is NOT for use by:

- designated facilities including children's camps, health care facilities, a delivery agent care facility, a school or private school, a social care facility, a university, college or institution with authority to grant degrees.

This Guide is designed to be user-friendly.

The right-hand, shaded column summarizes the contents of each section and highlights the basic requirements under the regulation. **You should read this first.** The left-hand side of the page contains the regulatory details needed to meet your regulatory responsibilities, as well as a reference to the appropriate section of the regulation. It is recommended that you refer to the text of the regulation itself for full compliance instructions.

Sources of additional information, including the other guides in this resource package, are also provided.

Remember, this guide is only a summary tool.
To be clear about your specific legal requirements, you must refer to the text of the Drinking-Water Systems Regulation (O.Reg.170/03) and the *Safe Drinking Water Act, 2002*. You can access these at www.ene.gov.on.ca under the section on Water, or by calling our Public Information Centre at 1-800-565-4923.

How Does The Kit Work?

This Kit for Regulated Non-Municipal Drinking Water Systems contains a number of Guides that, together, are designed to help owners and operators of regulated systems deliver safe, clean drinking water.

The Kit is made up of 4 Guides:

Guide 1: Does the Regulation apply to me?

Guide 2: What are my responsibilities under O. Reg 170/03?

(There are 4 versions of Guide 2, one for each of the non-municipal drinking water categories as defined in O. Reg 170/03. Refer to Guide 1 to determine which category your system falls into and whether you should use Guide 2a, 2b, 2c or 2d.)

Guide 3: How to Collect Drinking Water Samples

Guide 4: Glossary of Terms

Checklist for owners and operators of regulated non-municipal year-round residential drinking water systems

Step 1: Register Your Drinking Water System

Where do I register my drinking water system?
What must I complete and submit to register my system?

Step 2: Select a Licenced Laboratory to Analyze Your Drinking Water Samples

How do I choose a Licenced laboratory for testing my drinking water samples?
How can I find out if a laboratory is Licenced for specific testing?

Step 3: Know and Meet Your Sampling and Testing Requirements

What procedures must I follow when samples are collected?
What are my microbiological sampling and testing requirements?
What are my chemical sampling and testing requirements?
Also refer to Step 7 to learn the Operational Checks required

Step 4: Provide A "Minimum Level of Treatment"

What are the minimum treatment requirements?
What are the requirements for Groundwater Supplies?

- Primary Disinfection

What are the requirements for Surface Water (or a GUDI Source) Supplies?

- Filtration and Primary Disinfection
- Secondary Disinfection

What are the deadlines for providing treatment equipment?
Do I need to submit written notice of my intentions?

Step 5: Have an Engineering Evaluation Report Completed and Submit Written Notice to the Ministry of the Environment

What must my Engineering Evaluation Report cover and who must complete it?
When is my Engineering Evaluation Report Due?
When must I submit a written notice to the Ministry?
When must I submit subsequent Engineering Evaluation Reports?
What exemptions are available?

Step 6: Have A 'Certified Operator' adjust equipment and conduct operational checks

Who can operate my drinking water system and conduct operational tests?
Do I need a certified operator to conduct operational water tests?
How can I access more information on the certification and training requirements for an operator and water quality analyst?

Let's Get Started.

As an owner/operator of a regulated Non-Municipal Year-Round Residential drinking water system[1], you have an obligation to familiarize yourself with your duties under Ontario's Drinking-Water Systems Regulation (O. Reg. 170/03) and the other associated regulations and procedures that govern drinking water systems. This guide explains each of the regulatory requirements that apply to you, including:

- Registering your drinking water system
- Selecting a Licenced laboratory
- Meeting sampling and testing requirements
- Installing treatment equipment to meet a minimum level of treatment
- Preparing Engineering Evaluation Reports and written notices
- Using certified operators
- Conducting Operational checks
- Notifying authorities of adverse test results and other problems
- Taking corrective action
- Posting warning notices
- Making required information available

Continued...

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[1] According to section 1 of the Drinking Water Systems Regulation (O. Reg. 170/03), a "non-municipal year-round residential system" means a non-municipal drinking water system that is a not a seasonal system and serves, (a) a major residential development, or (b) a trailer park or campground that has more than five service connections; a "seasonal system" means a drinking water system that, (a) does not operate for at least 60 consecutive days in every calendar year, or (b) does not operate for at least 60 consecutive days in every period that begins on April 1 in one year and ends on March 31 in the following year.

Step 7: Undertake Operational Checks

What operational checks must I undertake?
How do I test for turbidity?
How do I test for residual chlorine?
What are my monitoring and reporting requirements?

Step 8: Determine if You Can Apply for Full Relief from Requiring Any Treatment

Who can apply for full relief from treatment requirements?
How do I apply?
Must I consult with the users of my system?
What exemptions exist for residential systems (under section 5)?

Step 9: Notify Authorities of Adverse Test Results and Other Problems

What adverse test results and other problems must I report?
Who must I notify and how must I notify them of these problems?

Step 10: Take Corrective Action

What corrective actions must I take when adverse test results are received or other problems are observed?

Step 11: Post Warning Notices of Potential Problems

When is it necessary to post a warning notice?
Where do I post the warning notice?
What must the warning notice say and where can I obtain them?

Step 12: Make Information Available to the Public

What reports and documents must I make available to the public?

Step 13: Prepare and Submit an Annual Report

How do I prepare my Annual Report?
When is the first Annual Report due?

Step 14: Retain Required Reports and Documents

What records must I retain? And for how long?

- Submitting an annual report
- Retaining required records

The guide also clarifies an option that exists in the regulation that can allow you to apply for full relief from treatment requirements. Step 8 will help you determine if you can apply for such relief.

Where do I register my drinking water system?

You must categorize your drinking water system under the Drinking-Water Systems Regulation (O. Reg. 170/03), and register it on the Ministry of the Environment's Drinking Water Information System (DWIS). Registration on this system also gives you the access you will need to make submissions to the Ministry as specified by the provisions of O. Reg. 170/03.

The Drinking Water Information System (DWIS) gathers, in one place, information about municipal and non-municipal drinking water systems across the province. This information will help the province, municipalities, non-municipal systems and Licenced laboratories meet our shared commitment to safe, clean drinking water for the people of Ontario.

Once you have finished registration, you will be able to log into DWIS at www.ene.gov.on.ca/environet/DWIS/index.htm.

What must I complete and submit to register my system?

To register, the Drinking Water System owner has to make a submission that includes the completion of:

- A *Drinking Water System Categorization* questionnaire,
- A *Drinking Water System Profile* questionnaire, and
- A *Laboratory Services Notification Form.*

To access the Drinking Water Information System Registration, go to www.ene.gov.on.ca/environet/DWIS/index.htm. Follow the onscreen instructions as you complete the submissions.

The Ministry of the Environment requires electronic submission of information. However, you may be authorized to make paper submissions under special circumstances (e.g. if you do not have internet access). For more information, refer to Guide 1 under 'Registration.'
To speak with someone at the registration desk, call 1-866-793-2588.

Step 1:
Register Your Drinking water System

You must register your drinking water system on the Ministry of the Environment's Drinking Water Information System (DWIS). You must complete the *Drinking Water System Categorization*, and *Drinking Water System Profile* questionnaires along with a *Laboratory Services Notification Form.* You can do this one of three ways:

1. To register online, go to the Ministry's homepage at www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System. Follow the on-screen instructions.
2. To access DWIS and obtain more information, you can also visit your local Government Information Centre. To find a Centre near you, call 1-800-267-8097 toll-free.
3. You may be authorized to make paper submissions under special circumstances (i.e. if you do not have internet access).

Refer to Guide 1 for more details on registration.

How do I choose a Licenced laboratory for testing my drinking water samples?

When you send your drinking water samples to a laboratory for analysis, there are a number of conditions you and the laboratory must meet. It is up to you to ensure each of the following:

- The laboratory must be Licenced by the Ministry to test for the specific parameter(s) you need analyzed. A Licenced laboratory must use accredited testing methods for each parameter it tests. Licenced laboratories are required to meet strict conditions in order to be Licenced for the testing of specific parameters by the Ministry of the Environment. Each laboratory is inspected by the Ministry's Specialized Laboratory Inspectors at least twice a year.
- Laboratories may accept your samples but then may need to sub-contract them to an appropriately Licenced laboratory. They must have your written permission to do so.
- As of October 1, 2003, if the laboratory performing the analysis is located outside Ontario, then ensure they are on a list of eligible out-of-province laboratories (check with the Ministry of Environment through the Ministry's website at: http://www.ene.gov.on.ca/envision/water/sdwa/Licencedlabs.htm or by contacting the Ministry's Service Desk at 1-866-494-6663).
- You must submit a written notice to the Ministry of the Environment identifying the Licenced laboratory(ies) that will be carrying out the testing before you send your samples to the laboratory(ies) for the first time. Once you have submitted the *Laboratory Services Notification Form*, you do not have to submit it again unless you change a laboratory or you change the testing services provided by a laboratory. Laboratories will assist you with completing this submission to ensure that the correct information is submitted.

  Note: It is strongly recommended that owners include a back-up laboratory on their *Laboratory Services Notification Form* in case the primary laboratory encounters unforeseen equipment/testing problems.
- It is the responsibility of the Licenced laboratory to ensure that they send a written report to you or the operator of the drinking water system and an electronic report to the Ministry of the Environment of all required test results within 28 days of your drinking water samples being analyzed and the data being approved.

How can I find out if a laboratory is Licenced for specific testing?

1. View the list of Licenced laboratories on the Ministry's web site: http://www.ene.gov.on.ca/envision/water/sdwa/Licencedlabs.htm or
2. Contact the Public Information Centre at 1-800-565-4923 or (416) 325-4000, or
3. Contact a laboratory directly and ask them what they are Licenced to test for.

Notify the Ministry about the Licenced Laboratories you have selected using DWIS.

You must notify the Ministry of the Environment when you have selected the laboratories that will carry out the analyses of your drinking water samples. Notice must be made using the approved submission - *Laboratory Services Notification Form* - that is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

Step 2: Select a Licenced Laboratory to Analyze Your Drinking Water Samples

When you send the drinking water samples that are required by the Drinking-Water Systems Regulation to a laboratory for testing, the testing must be carried out by a laboratory that is Licenced by the Ministry of the Environment for each specific parameter being tested. While some laboratories may be Licenced to test for all the microbiological and chemical parameters required by the Regulation, others may be Licenced to test only microbiological parameters and/or only some chemical parameters.

What procedures must I follow when samples are collected?

- Whenever a sample is collected, the person taking the sample must record the date and time the sample was taken, the location where the sample was taken and the sampler's name on the *Laboratory Chain of Custody Form.* (This form can be obtained directly from the Drinking Water Information System or you can obtain a Ministry-inspected Chain-of-Custody Form from the laboratory conducting the tests. The laboratory's form will be customized for the drinking water system and sent to the sampler with the sampling containers.)
- In addition, a Licenced laboratory will record the date and time the sample was tested, the results of the tests and the name of the person who conducted the tests
- You must discuss and make contractual agreements with the Licenced laboratories that perform the analytical tests for microbiological and chemical parameters. How often the samples have to be collected, and from where, depends on the type of test being performed. Laboratories must provide you with instructions on proper techniques for sample collection, transport storage and preservation, and will supply the appropriate containers.
- You must ensure that samples for microbiological testing are kept between 4 – 10 °C until they are delivered to the laboratory. Do not freeze samples.

What are my microbiological sampling and testing requirements?

How often to collect samples (at a minimum)

- Raw water samples: once a month
- Distribution samples: twice a week if not chlorinating[2] or chloraminating, or once every week if chlorinating or chloraminating

Specific parameters for testing

- *E. coli* or fecal coliforms
- Total coliforms
- HPC (only in distribution samples)

Where to collect samples

- Raw water samples: raw water source (i.e. lake, river, etc.) and if using groundwater, then from each well.
- Distribution samples: from the distribution system or plumbing

Who performs analysis for parameters

- A laboratory Licenced to test the parameter

By what date first samples must be taken

- June 1, 2003
- Within one week of commencing operation of new system where chlorine is not used.

Step 3:
Know and Meet Your Sampling and Testing Requirements

Previous drinking water regulations provided for tough monitoring standards and these are continued in the Drinking-Water Systems Regulation (O. Reg. 170/03). The sampling and testing requirements – for bacteria, including *E. coli*, and chemicals, such as PCBs and pesticides – have been designed to reflect the size and population served and the needs of each of the categories of drinking water systems

The collection and transport of drinking water samples could affect the accuracy of your test results!
See Guide 3 of this Resource Package for step-by-step instructions on how to properly collect drinking water samples.

Schedule 11 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Microbiological Sampling and Testing Requirements.

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[2] If, for a period of 24 consecutive months, the presence of *E. coli*, fecal coliforms, or total coliforms are confirmed in drinking water samples on no more than one occasion (as described in Schedule 1 of the Drinking-Water Quality Standards Regulation O. Reg. 169/03), then the sampling frequency may be reduced to: once every week if not chlorinating or not chloraminating, or once every two weeks if chlorinating or chloraminating. However, if, on any two or more occasions drinking water samples confirm the presence of *E. coli*, fecal coliforms, or total coliforms in a 24-month period (see Schedule 1 of the Drinking-Water Quality Standards Regulation O. Reg. 169/03), then you must immediately return to the original sampling frequency. A written notice of the intention to reduce testing frequencies must also have been given to the Director at least 7 days before the reductions come into effect (refer to the Ministry's Web site at www.ene.gov.on.ca for the approved notice.

- Within two weeks of commencing operation of new system where chlorine is used.

Note: If your drinking water system is not in operation for seven days or more, or if for such a period the system supplies water only to the private residences that are occupied by the owner of the system, members of the owner's family, employees or agents of the owner of the system or their families, you are not required to perform microbiological sampling and testing during that period. However, upon restarting your system you must sample and receive the results prior to supplying drinking water to users of the system.

What are my chemical sampling and testing requirements?

Schedule 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Chemical Sampling and Testing Requirements.

How often to collect samples (at a minimum)
It varies depending on the parameter (See Schedule 13)

- All organic and inorganic parameters listed in Schedules 23 and 24 of O. Reg. 170/03: once every 36 months (if raw water supply is from groundwater), or once every 12 months (if raw water supply is from surface water)
- Nitrate and Nitrite: once every 3 months
- Sodium and Fluoride: every 60 months
- Lead: every 12 months
- Trihalomethanes (THMs) (only those systems that chlorinate or chloraminate): once every 3 months

Where to collect samples
Point where water enters the distribution system or plumbing, except for:

- Trihalomethanes: the sample must be taken from a point in the distribution system that is likely to have an elevated potential for the formation of THMs
- Lead: the sample must be taken from a remote point in the distribution system that is likely to have an elevated concentration of lead

Who performs analysis for parameters

- A laboratory Licenced to test the parameter

By what date first samples must be taken

- If testing was previously done under Regulations 459/00 or 505/01 or under an OWRA approval or order, within the period of time set by the Regulation after the date of the last sample;
- For new systems that have not done chemical testing described in the previous bullet, within the period of time set by the Regulation or 12 months, whichever is shorter.

Note: If, any chemical test result exceeds half of the Maximum Concentration for the parameter listed in Schedule 2 of the *Ontario Drinking water Quality Standards Regulation* (O. Reg. 169/03), you must increase the frequency of the sampling for that parameter to once every 3 months. If subsequent levels are below half the maximum concentration for 4 consecutive quarters (surface water) or 2 consecutive quarters (groundwater), you may then revert back to the original frequency.

Note: If your drinking water system is not operating for 60 or more consecutive days, or if for such a period the system supplies water only to the private residences that are occupied by the owner of the system, members of the owner's family, employees or agents of the owner of the system or their families, you are not required to perform sampling and testing for trihalomethanes, nitrate and nitrite during that period.

What are the minimum treatment requirements?

As a drinking water system owner, you must treat your water by the date specified in Schedule 2 of the Drinking-Water Systems Regulation (O. Reg. 170/03) for your system's category, unless you APPLY FOR RELIEF (refer to section on relief later in this guide).

What are the requirements for Groundwater Supplies?

- **Primary Disinfection**

You must ensure that you provide water treatment equipment that is capable of achieving, at all times, at least 99 per cent removal or inactivation of viruses in accordance with the Ministry of the Environment's "Procedure for Disinfection of Drinking Water in Ontario."

What are the requirements for Surface Water (or a GUDI[3] Source) Supplies?

- **Filtration and Primary Disinfection**

You must ensure that you provide water treatment equipment that is capable of achieving, at all times, removal or inactivation of :

99 per cent of *Cryptosporidium* oocysts,
99.9 per cent of *Giardia* cysts, and
99.99 per cent of viruses.

in accordance with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario."

If you are using UV or other non-chlorine-based primary disinfection equipment, you must ensure that the equipment has a feature that causes an alarm to sound in the building where the disinfection equipment is located, at a location where a person is present (if a person is not always present at the building where the disinfection equipment is located), when:

equipment malfunctions;
equipment loses power; or
the disinfection equipment is not providing the appropriate level of disinfection.

If an alarm sounds, a 'certified operator' must be dispatched to take appropriate action and must arrive at the building where the disinfection equipment is located as soon as possible.

- **Secondary Disinfection**

Water treatment equipment must be capable of:

- secondary disinfection using chlorination or chloramination in accordance with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario"; and
- achieving at all locations within the distribution system a free chlorine residual of 0.2 mg/L (if chlorinating), or a combined chlorine residual of 1.0 mg/L (if chloraminating).

Step 4:
Provide A "Minimum Level of Treatment"

You have the flexibility to select any treatment technology that meets the performance-based criteria established in Schedule 2 of the Drinking-Water Systems Regulation (O. Reg. 170/03).
To meet the Regulation's mandatory treatment requirements, you must, at the very least, ensure that:

- wells are constructed and maintained to prevent surface water and other foreign materials from entering them;
- appropriate water treatment equipment is provided;
- water treatment equipment is operating whenever water is being supplied;
- water treatment equipment is operated as outlined in the Ministry's "Procedure for Disinfection of Drinking Water in Ontario";
- water treatment equipment is operated such that it achieves the design capabilities it is required to have;
- water treatment equipment is properly maintained;
- written operating instructions for the water treatment are kept near the equipment;
- adequate supplies of chemicals (or other materials necessary for operating the water treatment equipment) are: (a) clearly marked; (b) kept nearby the equipment; (c) separated from other chemicals and materials that are not used for the water treatment or distribution system;
- replacement parts (for those parts that need to be replaced periodically) are kept nearby; and
- treatment equipment is operated by a 'certified operator.'

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[3] A groundwater source under the direct influence of surface water, as defined in O. Reg. 170/03. Refer to Guide 1 (Does the Regulation Apply to Me?) for more information.

What are the deadlines for providing treatment equipment?

If your drinking water system was operating before O. Reg. 170/03 came into effect on June 1, 2003, the deadline for providing treatment equipment is:

- July 1, 2006, if your drinking water system obtains water from a surface water source or from a groundwater source
- New systems must meet the treatment requirements immediately upon the commencement of operations.
  Note, the compliance dates specified in an existing approval under the *Ontario Water Resources Act* or orders in relation to a requirement to install treatment equipment take precedence over the compliance dates in the Regulation.

Do I need to submit written notice of my intentions?

If you have already notified the Ministry of the Environment of the completion of the Engineering Evaluation Report or submitted an application for relief from the requirements for provision of treatment equipment by December 31, 2005, then you do not need to submit this notice.

Otherwise, you must submit a written notice to the Ministry of the Environment Director on the approved submission by December 31, 2005, that includes one of the following declarations:

1. You intend to comply with the requirements for treatment equipment by the specified deadline (submit using DWIS), OR
2. You intend to make an application for relief from some or all of the requirements for provision of treatment equipment (submit using DWIS).

Notify the Ministry using DWIS.

Written notice of your intent to comply with the treatment requirements or of your intent to apply for relief must be made using the approved notice -- *Notification of Intent to Comply with Treatment Requirements* -- which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

Schedule 2 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers minimum levels of treatment for drinking water systems.

What must my Engineering Evaluation Report cover and who must complete it?

The Report must certify that a professional engineer[4] has visited your drinking water system and include the engineer's opinion that all equipment needed to comply with the treatment requirements (in accordance with Schedule 2 of O. Reg. 170/03) is being provided, as well as all the equipment needed to comply with the operational checks provisions (in Schedules 6 and 8). As a minimum, in order to comply with Schedule 21 of the Regulation, a Report must:

1. specify the category of drinking water system under O. Reg. 170/03;
2. include the opinion of the engineer that all equipment has been provided in compliance with Schedules 2, 6, and 8;
3. set out the engineer's reasons for the opinion, along with the technical and other information he or she relied on in reaching that opinion; and
4. include a maintenance schedule that sets out requirements relating to the frequency at which the equipment must be inspected, tested and replaced.

You must ensure that the professional engineer that prepares the Engineering Evaluation Report has experience in sanitary engineering.

When is my Engineering Evaluation Report due?

If your drinking water system began operating on or after June 1, 2003, you must ensure that a professional engineer submits to you an Engineering Evaluation Report within 30 days of your new drinking water system beginning operation.

If your drinking water system began operating before June 1, 2003, you must ensure that a professional engineer submits to you an Engineering Evaluation Report:

no later than July 31, 2006 for surface water systems and for groundwater systems.

Do not submit the Engineering Evaluation Report to the Ministry, but keep it on file to be made available upon request.

When must I submit a written notice to the Ministry?

Within seven (7) days after the date the Engineering Evaluation Report is required to be prepared, you must submit a written notice to the Ministry of the Environment Director using the approved notice in DWIS regarding the engineering evaluation report and include a copy of the engineer's opinion regarding your drinking water system's compliance.

Step 5:

Have an Engineering Evaluation Report Completed and Submit Written Notice to the Ministry of the Environment

As the owner/operator of a regulated non-municipal year-round residential drinking water system, you must ensure that a professional engineer certifies that the system is in compliance with the regulatory requirements.

The engineer must prepare an Engineering Evaluation Report for you. In turn, you must submit a notice, using DWIS, to the Ministry of the Environment within 7 days of the completion of the report. This certification has to be renewed every five years for surface water systems and every 10 years for groundwater systems.

These requirements replace the need to obtain a certificate of approval under the *Ontario Water Resources Act* approval.

The required *Engineering Evaluation Report* notice is available through DWIS. Access it from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

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[4] According to section 1 of the Drinking-Water Systems Regulation (O. Reg. 170/03), "professional engineer" means a professional engineer as defined in the *Professional Engineers Act*

Notify the Ministry using DWIS

Written Notice must be made using the approved submission which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

- *Notice of Completion of an Engineering Evaluation Report for Existing System*
- *Notice of Completion of an Engineering Evaluation Report for New or Altered Systems*
- *Declaration of Professional Engineer to be Included Within an Engineering Evaluation Report*

Schedule 21 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the preparation of Engineering Evaluation Reports and the submission of the required notices to the Ministry.

When must I submit subsequent Engineering Evaluation Reports?

As a drinking water system owner, you must also ensure that a professional engineer prepares and submits to you Engineering Evaluation Reports not later than:

- five (5) years from the date your last Engineering Evaluation Report was prepared or required to be prepared (the earlier of the two) if your drinking water system obtains water from a surface water source.
- ten (10) years from the date your last Engineering Evaluation Report was prepared or required to be prepared (the earlier of the two) if your drinking water system obtains water from a groundwater source.
- If you alter[5] your drinking water system ("alteration", as defined in the *Safe Drinking Water Act*, does not include repairs), then you must ensure that a professional engineer submits to you an Engineering Evaluation Report within 30 days of commencing operation of the altered system.

Notices are also required to be submitted to the Ministry at these times.

What exemptions are available?

- If you have already prepared and submitted to the Ministry of the Environment (MOE) Director an Engineering Evaluation Report under Regulation 505/01, you are exempt from preparing your first Engineering Evaluation Report and submitting a written notice to the MOE Director.
- If you have been granted an approval after August 1, 2000, under section 52 of the *Ontario Water Resources Act* (Certificate of Approval), you are exempt from preparing your first Engineering Evaluation Report and submitting a written notice to the MOE Director.
- However, if you have been granted an approval under *Ontario Water Resources Act* after August 1, 2000, you must have an engineer prepare a statement certifying that she or he has visited the system and that equipment required by Schedules 2, 6 and 8 of the Regulation is being provided (see Schedule 21 for more details). The Regulation provides that the *Ontario Water Resources Act* approval is revoked on the date the owner submits this statement to the Director, which means the drinking water system will no longer be subject to the requirements of the *Ontario Water Resources Act* approval – and will, instead, be regulated by the Drinking-Water Systems Regulation under the *Safe Drinking Water Act*.
- If you have been granted relief, in accordance with schedule 5 of O. Reg. 170/03, by the MOE Director from complying with all requirements to provide treatment equipment you are exempt from preparing an Engineering Evaluation Report and submitting this written notice to the MOE Director.

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[5] According to section 2 of the *Safe Drinking Water Act*, "alteration" includes the following, in respect of a drinking water system, but excludes repairs to the system: (1) an extension of the system, (2) a replacement of part of the system, (3) a fragmentation of the system, and (4) taking all or part of the system permanently out of service

Who can operate my drinking water system and conduct operational tests?

Section 12 (1) of the *Safe Drinking Water Act* requires that only persons holding a valid operator's certificate can operate a municipal system, or a regulated non-municipal system. Your system is defined as a **'non-municipal year-round residential drinking water system'** and therefore is a regulated non-municipal system that requires a certified operator. Specifically, your drinking water system will require a person who holds a "Limited Groundwater" or "Limited Surface Water" Certificate, depending on the source of your water. Persons holding a Class I-IV Water Treatment Certificate are also qualified to operate your system.

You are required to have a certified operator by the date you are required to have installed new treatment equipment under O. Reg. 170/03. Drinking water systems in **the non-municipal year-round residential category** must install treatment equipment by July 1, 2006 for surface water sources, and groundwater sources.

Since new systems must immediately comply with the treatment requirements, your new system will require having a certified operator immediately as well.

Certification qualifications are specified in O. Reg. 128/04, the Certification of Drinking water System Operators and Water Quality Analysts Regulation. Additional information can be found in "The Certificate Guide for Operators and Water Quality Analysts of Drinking water Systems". You can access this guide by going to the Ministry of the Environment web site at www.ene.gov.on.ca, clicking on the Water section and going to Research and Publications.

O. Reg. 170/03 requires that the following duties must be performed by a certified operator in systems such as yours:

- make all adjustments to the water treatment equipment;
- examine, within 72 hours after the tests are conducted, the results of continuous monitoring equipment;
- be promptly dispatched to the drinking water system if alarms sound as a result of equipment malfunction or loss of power or a test result which is above the maximum or below the minimum alarm standards established by the Regulation;
- perform all total chlorine residual, free chlorine residual, turbidity or fluoride testing required; and
- perform regular checks on water treatment equipment to confirm proper functioning.

The qualifications for a "Limited Groundwater" or "Limited Surface Water" Certificate are:

- Pass the applicable examination
- Grade 12 or equivalent (Persons who have one month of experience working with water systems between August 1, 2003 and August 1, 2004 require Grade 10 or equivalent.)
- Complete entry level course (applies only to persons who apply after August 1, 2005)

Step 6:
Have A 'Certified Operator' Adjust Equipment and Conduct Operational Checks

Drinking water systems that fall within the non-municipal year-round residential category must have a certified operator as specified under the *Safe Drinking Water Act*.

The Ministry of the Environment filed a new regulation governing the certification of operators on May 14, 2004. The regulation came into effect on August 1, 2004. The regulation is known as the Certification of Drinking-Water System Operators and Water Quality Analysts Regulation or O. Reg. 128/04.

A certified operator is a person who:

- conducts operational checks or adjusts, tests, or evaluates a process that controls the effectiveness or efficiency of a subsystem; and
- adjusts or directs the flow, pressure, or quality of water within the subsystem, if the person works in a distribution subsystem or a distribution and supply subsystem.

Do I need a certified operator to conduct operational water tests?

Testing for the 24 operational parameters listed under subsection 2(1) of the Drinking water Testing Services Regulation, O. Reg. 248/03 (e.g. testing for chlorine residual, turbidity, alkalinity, pH), can be done by a qualified person. A qualified person includes a certified drinking water operator, and a water quality analyst.

A water quality analyst means a person who holds a water quality analyst's certificate, issued under O. Reg. 128/04. To secure such a certificate a person must meet certain education and experience requirements, and pass an exam. More details about these requirements are included in the Guide referred to below.

How can I access more information on the certification and training requirements for an operator and water quality analyst?

You are encouraged to read the ministry's 'Certification Guide for Operators and Water Quality Analysts of Drinking Water Systems'

The Guide describes in detail the operator and water quality analyst certification program including:

- the responsibilities of an owner with regard to operator and water quality analyst certification
- operating standards that owners are expected to have in place with regard to operators employed in their system
- the qualifications required for different types of operator certificates and the study material that will assist operators to prepare for a certification exam
- the qualification requirements for a water quality analyst certificate
- the annual training that operators and water quality analysts need to take for certificate renewal and the process for renewing a certificate, and
- the fee structure for certificates.

The Guide and application forms are posted on the ministry's web site at www.ene.gov.on.ca in the Water Section, under Research and Publications, as well as the web site of the Ontario Environmental Training Consortium, www.oetc.on.ca. The OETC is the organization that administers the certification program for the ministry. Please contact the OETC at 905-796-2851 for any questions concerning the "Limited" Certificates.

What operational checks must I undertake?

In accordance with Schedule 8 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must ensure that a certified operator performs a regular operational check to ensure that all water treatment equipment is properly functioning, as specified in the maintenance schedule of the Engineer's Evaluation Report.

You must ensure that a certified operator or water quality analyst collects samples and tests your water for turbidity, and free residual chlorine or combined chlorine residual, if applicable. Operational checks for turbidity and chlorine residual should be conducted on-site.

Whenever a sample is taken, the person taking the sample must record the date and time the sample was taken, the location the sample was taken and the person's name. In addition, the record should include the date and time the sample was tested and the results of the tests (and the name of the person who conducted the test, if this is a different person from the person who took the sample).

Note: You may have a person other than a certified operator or water quality analyst perform operational checks, but only until your treatment deadline comes into effect (July 1, 2006 for both surface water sources and groundwater sources).

How do I test for turbidity?

Surface Water Using Filtration:

If continuous monitoring equipment is required on filtration equipment (i.e. direct filtration, conventional filtration, Diatomaceous Earth Filtration and membrane filtration-see Procedure for Disinfection) to comply with the treatment performance requirements of Schedule 2, you must ensure that sampling and testing for turbidity is conducted by continuous monitoring equipment on each filter effluent line. If continuous monitoring equipment is not required, (if you use slow sand filters or cartridge filters-see Procedure for Disinfection), then you must ensure that a daily water sample is taken on each filter effluent line and tested for turbidity.

Other: At least one sample per month shall be taken and immediately tested for turbidity before the raw water enters the treatment system. When testing for turbidity, a turbidity meter that measures turbidity in Nephelometric Turbidity Units (NTUs) must be used. See Schedule 6 of the Regulation.

How do I test for residual chlorine?

Primary Disinfection – Chlorination:

A sample shall be collected at least once per day and immediately tested for free chlorine residual in the treatment process at the end of contact time as required in the Ministry's "Procedure for Disinfection of Drinking Water in Ontario."

Secondary Disinfection – Chlorinating or Chloramination:

Samples shall be collected from the distribution system, at least once every day and immediately tested for free chlorine residual or combined chlorine residual.

Step 7:
Undertake Operational Checks

Please note that every time a water sample is collected for microbiological testing, a measurement of free chlorine residual (where chlorination is provided) or combined chlorine residual (where chloramination is provided) must be conducted at the same time and same location and noted on the *Laboratory Chain of Custody Form.* This measurement of chlorine residual taken with a microbiological sample can satisfy the daily requirement to test for chlorine residual under the Regulation.

Schedule 8 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers operational checks.

What are my monitoring and reporting requirements?

Compliance Calendar for Periodic Monitoring & Reporting Requirements

FREQUENCY	MONITORING WATER QUALITY AND PROPER FUNCTIONING OF EQUIPMENT	PREPARING AND RECEIVING RECORDS/REPORTS	DISTRIBUTING AND RETAINING (ON-FILE) REPORTS/RECORDS
At least once a day	**Measure free chlorine residual (if using chlorination) or combined chlorine residual (if using chloramination)** **Primary Disinfection (Chlorination)** ♦ Ensure that a water sample is collected and tested immediately for free or combined chlorine residual at least once every day in the treatment process at the end of contact time in accordance with the Ministry's *"Procedure for Disinfection of Drinking Water in Ontari."* (optimum 0.2 mg/L) ♦ If the system uses chloramination, sampling and testing for combined chlorine residual is to be undertaken by continuous monitoring equipment. **Secondary Disinfection** ♦ Ensure that a distribution sample is taken at least once every day and is tested immediately for free chlorine residual (if system provides chlorination optimum 0.2 mg/L) or combined chlorine residual (if the system provides chloramination optimum 1.0 mg/L). (Reg. Schedule 8)	♦ For each sample taken, make a record of the date and time the sample was tested, the name of person who performed the test and the test results and note them on the *Laboratory Chain of Custody Form* if the test was done on a microbiological sample submitted to a Licenced laboratory. (Reg. Schedule 6)	♦ Keep every record made on free chlorine residual or combined chlorine residual tests for at least 5 years. (Reg. Section 13)
Surface Water Using Filtration Continuously, if using continuous monitoring equipment At least once a day if not required to use continuous monitoring equipment **Other** At least once per month	**Measure turbidity** **Year-Round Residential** **Surface Water Using Filtration** ♦ If continuous monitoring equipment is required, ensure the sampling and testing for turbidity is conducted by continuous monitoring equipment on each filter effluent line. ♦ If continuous monitoring is not required, at least one sample per day shall be taken and immediately tested for turbidity on each filter effluent line. **Other** ♦ At least one sample per month must be taken and immediately tested for turbidity before the raw water enters the treatment system. (Reg. Schedule 8)	♦ For each sample, make a record of the date and time the sample was tested, the name of person who performed the test and the test results. (Reg. Schedule 6)	♦ Keep every record made on turbidity tests for at least 5 years. (Reg. Section 13)

Twice a week if not chlorinating or chloraminating Once a week if chlorinating or chloraminating	**Test for microbiological parameters in treated water** Collect treated samples from the distribution system or plumbing. Send samples to a laboratory Licenced to test (i) *E. coli* or fecal coliforms, (ii) total coliforms, and (iii) HPC. (Reg. Schedule 11)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6	◆ Keep every report of analytical results given to you by the laboratory for at least 5 years. (Reg. Section 13)
Frequency specified in maintenance schedule of Engineer's Evaluation Report	**Check of Treatment Equipment** ◆ Ensure that a certified operator checks all water treatment equipment to confirm that it is functioning properly. (Reg. Schedule 8)	◆ For each equipment check, make a record of the date and time, the name of the person who performed it, and the results. (Reg. Schedule 8)	◆ Keep every record of an Operational Check made for at least 5 years. (Reg. Section 13)
Once a month	**Test for coliforms in raw water** ◆ Collect raw water samples from the untreated water source; and IF using groundwater, then from each well. ◆ Send samples to a laboratory Licenced to test (i) *E. coli* or fecal coliforms, and (ii) total coliforms. (Reg. Schedule 11)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 5 years. (Reg. Section 13)
Every 3 months	**Test for nitrate and nitrite and trihalomethanes (only for systems that chlorinate or chloraminate)** Collect samples from the point where water enters the distribution system or plumbing (except trihalomethanes [THMs] the sample must be taken from a point in the distribution system that is likely to have an elevated potential for the formation of THMs). Send samples to a Licenced laboratory for testing. (Reg. Schedule 13)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Once a year	**Test for lead** ◆ Collect samples from the point in the distribution system that is likely to have an elevated concentration of lead. Send samples to a Licenced laboratory for testing. (Reg. Schedule 13)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Once a year (surface water source) Every 3 years (groundwater source)	**Test for all organic and inorganic parameters listed in Schedules 23 and 24 of the Drinking-Water Systems Regulation** ◆ Collect samples from the point where water enters the distribution system or plumbing. Send samples to a Licenced laboratory for testing. (Reg. Schedule 13)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)

Every 5 years	**Test for sodium and fluoride** Collect samples from the point where water enters the distribution system or plumbing. Send samples to a Licenced laboratory for testing. Note: Flouride samples can be collected and tested by a Certified Operator or by a water quality analyst. (Reg. Schedule 13)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Once a year	**Prepare Annual Report**	◆ Prepare and submit an annual report using the format provided by the Ministry of the Environment through DWIS. (Reg. Section 11)	◆ Send annual report to: 1. Electronically to the Ministry of the Environment; 2. Every person who requests a copy. ◆ Keep copies of the annual report for at least 5 years. (Reg. Section 13)
Every 5 years (surface water source) Every 10 years (groundwater source)	**Prepare an Engineering Evaluation Report and submit a written notice to the Ministry** (within 7 days after the engineering evaluation report is required to be prepared). (Reg. Schedule 21)	◆ This written notice must include a copy of an engineer's written opinion that all equipment required for treatment (schedule 2) and operational checks (schedules 6, 8) is being provided and the reasons for the opinion. (Reg. Schedule 21)	◆ Keep your Engineering Evaluation Report for at least 15 years. (Reg. Section 13)

Step 8:
Determine if You Can Apply for Full Relief from Requiring Any Treatment

As recommended by Commissioner O'Connor, the Drinking-Water Systems Regulation (O. Reg. 170/03) allows certain owners to apply for an approval from the Ministry of the Environment relieving them of the requirement to provide minimum treatment. This relief is only allowed, however, if the owner is able to demonstrate that the safety of the drinking water provided by the owner's system meets acceptable risk-based standards. This process is not available to owners of drinking water systems that obtain their water from a surface water source, including groundwater systems under the influence of surface water.

Those who wish to go through this process have to make an application that provides a comprehensive range of information based on a risk analysis and management plan.

Who can apply for full relief from treatment requirements?

Owners of a non-municipal drinking water system that obtain water from a groundwater source can apply for relief from all treatment requirements (found in Schedule 2 of the Drinking-Water Systems Regulation).

How do I apply?

Drinking water system owners who wish to apply for relief must obtain the services of a professional engineer in order to make the necessary assessments required by the application. The engineer must follow the Ministry of the Environment's "Guide for Applying for Approvals Related to Municipal and Non-Municipal Drinking water Systems," and must complete the appropriate submissions.

Submissions or activities that are required to be carried out by the engineer as part of an application process include:

- a written statement that confirms that he or she has requested all information related to the drinking water system from the local health unit, has consulted with the Local Medical Officer of Health about potential health issues or concerns related to the drinking water system, and has set out in the statement any issues or concerns raised;
- a characterization of the drinking water system's raw water supply that includes a minimum of 24 CONSECUTIVE months microbiological sample history, a statement concluding that there are no significant and rapid shifts in chemical and physical characteristics that indicate surface water influence (that is, pH, turbidity, temperature, nitrate, nitrite, and conductivity), and copies of any other records that show past evidence of surface-water contamination (such as, presence of viruses, chlorophyll a, protozoan cysts, macro-organisms);
- surveys and analyses prepared by or under the supervision of the engineer that deal with the potential risks of microbiological contamination related to each of the following: well construction and well-head protection, the well-head vicinity and recharge zone, and distribution system and plumbing; and
- a proposed management plan prepared by or under the supervision of the engineer that provides guidance for operations related to preventing, reducing and managing microbiological risks[6]

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[6] A proposed management plan for preventing, reducing and managing microbiological risks should include the following components: (1) operating procedures relating to the maintenance activities at the start of an operating season and relating to routine flushing and disinfecting activities (you must also include written operating procedures relating to increased monitoring activities after adverse weather events such as heavy rainfall or floods); (2) logs relating to samples taken (include location, sample times, signatures, and test results); (3) a protocol for notification (and a contact list) that clearly describes the steps to notify the users of the system, the Ministry of the Environment, and the Local Medical Officer of Health upon adverse events and the importance of keeping contact lists up to date; (4) a procedure for corrective action upon adverse events that is consistent with the Ministry procedure entitled, "Procedure For Corrective Action for Systems Not Currently Using Chlorine"; and (5) a procedure for making records, in order to summarize any corrective actions taken, the results of the corrective action, and the resolution of the issues that gave rise to the corrective actions.

Notify the Ministry using DWIS

Notification of your intent to apply for regulatory relief must be made using the approved notice - *Notification of Intent to Apply for Relief* - which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

Schedule 5 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the application for full relief from all treatment requirements.

Must I consult with the users of my system?

Ensure that the occupants of all private residences served by the system are notified of the application and given reasonable opportunity to make comments. A written summary of those comments and responses must also be prepared before the application for relief is made to the Ministry of the Environment.

What exemptions exist for residential systems (under section 5)?

If you own a residential system that obtains all its water from a drinking water system that is subject to O. Reg. 170/03, and that provides secondary disinfection in accordance with the Regulation, and the owner of the system providing the water has agreed in writing to ensure that (1) the secondary disinfection equipment is operated so that at all times and at all locations within your distribution system the required free or combined chlorine residual is maintained (whichever applies), and (2) to sample and test the water in the distribution system of the system that obtains the water as if it were part of the distribution system of the system providing the water, you are exempt from most of the requirements of O. Reg. 170/03. If you do not have such an agreement, certain sampling and monitoring activities of the water in your distribution system still apply to you as the owner of that system. Refer to section 5 of the Regulation for more details about these requirements.

Step 9: Notify Authorities of Adverse Test Results and Other Problems

The Drinking-Water Systems Regulation (O. Reg. 170/03) continues to require mandatory reporting of adverse test results to both the Local Medical Officer of Health and the Ministry of the Environment.

Here is how the notification of an adverse test result works:

☐ The Licenced laboratory identifies an adverse result.
☐ The Licenced laboratory notifies the system owner, the Ministry's Spills Action Centre (SAC), and the Local Medical Officer of Health (LMOH).
☐ The owner notifies SAC and LMOH.

What adverse test results and other problems must I report?

The following adverse test results must be reported immediately to the Ministry of the Environment's Spills Action Centre and the Local Medical Officer of Health in accordance with section 18 of the *Safe Drinking Water Act* (SDWA):

- a result that exceeds any of the standards listed in Schedules 1, 2 or 3 of the Ontario Drinking-Water Quality Standards Regulation;
- a result indicating the presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci* in a sample of drinking water;
- a result indicating the presence of a pesticide not listed in Schedule 2 of the Ontario Drinking-Water Quality Standards Regulation is detected in a sample of drinking water;
- if chlorination is used, a result indicating that the concentration of free chlorine residual is less than 0.05 mg/L in a distribution sample;
- if chloramination is used, a result indicating that the concentration of combined chlorine residual is less than 0.25 mg/L in a distribution sample;
- a test result exceeding the maximum concentration for a parameter identified under an approval or order as a health-related parameter;
- if filtration is required, a result indicating the turbidity is more than 1.0 NTU in filter effluent; if grab sampling or, if continuously monitoring, more than 1.0 NTU in 2 consecutive filter effluent samples taken 15 minutes apart (report only once per 24 hours);
- a result indicating the sodium concentration exceeds 20 mg/L in a sample of drinking water (report only once per 5 years); or
- a result indicating the fluoride concentration exceeds 1.5 mg/L in a sample of drinking water (report only once per 5 years).

In addition, any observation that indicates that a drinking water system that provides (or is required to provide) disinfection is directing water that has not been properly disinfected to users, must also be reported immediately to the Ministry's Spills Action Centre and the Local Medical Officer of Health, in accordance with section 18 of the SDWA.

Who must I notify and how must I notify them of these problems?

Step 1, Make immediate report (by telephone or in person).
Immediately report the adverse result or other problem to the Ministry's Spills Action Centre (telephone 1-800-268-6060) and the Local Medical Officer of Health, by speaking with someone in person or on the telephone.

When you make a report, you must specify the adverse test result or the observation that your drinking water system has not adequately disinfected water directed to users of the system, and the action or appropriate corrective action that is being taken.

Step 2, Deliver written notice.
You must deliver written notice within 24 hours of giving the immediate verbal notice using the approved notice available through DWIS. The written notice must indicate the problem and the appropriate corrective action that is being taken. Send the written notice to:

- the Local Medical Officer of Health; and
- the Ministry of the Environment's (MOE) Spills Action Centre (Submit through DWIS).

Step 3, Deliver follow-up notice of action taken.
You must deliver follow-up written notice within 7 days of resolving the issue that gave rise to the first notice using the approved notice available through DWIS. The follow-up written notice must summarize the action taken and the results achieved to the Local Medical Officer of Health, and the MOE Spills Action Centre.

Use the approved notices available in DWIS

Written notice of any adverse test results or other problems, followed by a second notice detailing the resolution of the problem, must be made using the approved notices, which are to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

- *Written Notice of Adverse Test Results and Other Problems*
- *Notice of Issue Resolution at Drinking Water Systems* (AWQI-NR)

Submit the written notice to the Spills Action Centre by going to the Ministry of the Environment's website, then accessing DWIS. Log in by entering your user name and password, and select the appropriate notice.

Within 24 hours of giving the required immediate verbal notice of any problem, drinking water system owners must also submit the notice to the Local Medical Officer of Health. .

Once the issue is resolved, complete the *Notice of Issue Resolution at Drinking Water Systems*. Submit it to the Ministry through DWIS and submit another copy to the Local Medical Officer of Health.

Step 10: Take Corrective Action

In the event that your system experiences an adverse test result or you observe that your system is not properly disinfecting water that is being directed to users, not only must you notify the appropriate authorities (including the Ministry of the Environment and the Local Medical Officer of Health), but you must also take corrective action to protect the users of your water. There are different types of corrective actions depending on the type of water quality problem you may find in your samples. Schedule 18 of the Drinking-Water Systems Regulation (O. Reg. 170/03) describes different corrective actions that are required following certain adverse test results or observation of certain problems.

What Corrective Actions Must I Take When Adverse Test Results are Received or Other Problems are Observed?

(Schedule 18 of O. Reg. 170/03)

Adverse test result or other problem	Water use	Treatment	Sampling and testing	Consult with ...
Water not disinfected properly has been directed to users	Take steps to notify users to use an alternate source of drinking water or to bring water to a rolling boil for one minute before use.	Restore the disinfection.		Local Medical Officer of Health
If filtration is required, the turbidity in filter effluent is more than 1.0 NTU	Take steps to notify users to use an alternate source of drinking water or to bring water to a rolling boil for one minute before use if problem can not be resolved quickly.	1. Check equipment, backwash or replace filters, and correct any other faulty processes. 2. If resample confirms exceedance, follow manufacturer's servicing recommendations and flush the distribution system and plumbing.		Local Medical Officer of Health
If chlorination is used, free chlorine residual is less than 0.05 mg/L in a distribution sample	Take steps to notify users to use an alternate source of drinking water or to bring water to a rolling boil for one minute before use if problem can not be resolved quickly.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Test to ensure that a 0.2 chlorine residual is achieved.	Local Medical Officer of Health
E. coli or fecal coliform detected from any one sample.	Take steps to notify users to use an alternate source of drinking water or to bring water to a rolling boil for one minute before use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, on next page).	Immediately resample and test (see note 2, on next page). Continue corrective action until *E. coli* or fecal coliforms are no longer detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms total coliforms (but not fecal coliforms).	Take steps to notify users to use an alternate source of drinking water or to bring water to a rolling boil for one minute before use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, on next page).	Continue corrective action until total coliforms are no longer detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health

Resample test confirms more than 200 Background CFU/100mL (but not fecal coliforms) on a total coliform membrane filter.	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until less than 200 Background CFUs/100 mL are detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms more than 500 CFU/mL (but not fecal coliforms) on a heterotrophic plate count (HPC).	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until less than 500 CFUs/mL are detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci*.	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci* are not detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms exceedance of a chemical and radiological parameter listed in Schedule 2 or 3 of the *Ontario Drinking water Quality Standards Regulation* (O. Reg. 169/03)	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms that a pesticide NOT listed in Schedule 2 of the *Ontario Drinking water Quality Standards Regulation* (O. Reg. 169/03) is detected.	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms exceedance of the maximum concentration for a parameter identified under an approval or order as a health-related parameter	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms a sodium concentration that exceeds 20 mg/L and a report has not been made in the previous 5 years	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health

Note 1: If you are not currently using chlorine, take the corrective action as outlined in the Ministry's "Procedure for Corrective Action for Systems Not Currently Using Chlorine" (available on the Ministry's Web site, www.ene.gov.on.ca).

Note 2: "resample and test" (as defined in O. Reg. 170/03) for a microbiological parameter means that you must immediately collect and transport a set of at least 3 drinking water samples for the parameter, which caused the adverse water quality to your Licenced laboratory for analysis. The first sample must be from the same location as the sample that gave rise to the corrective action. The second sample must be from a location that is a significant distance upstream from the location of the adverse result, where reasonably possible, and the third sample must be from a location that is a significant distance downstream from the adverse result, where reasonably possible.

To "resample and test" for a parameter that is not a microbiological parameter means that you must collect and transport a water sample for the parameter which caused the adverse water quality from the same location as the sample that gave rise to the corrective action to your Licenced laboratory for analysis.

When is it necessary to post a warning notice?

Under Schedule 19 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must post a warning notice:

- if you are not presently in compliance with microbiological sampling and testing requirements of Schedule 11;
- if you did not carry out the appropriate corrective action required under Schedule 18; and/or
- if you must, as a corrective action, notify all users to use an alternate source of water or to boil the water for at least one minute before using.

Warning Notices do NOT provide a regulatory exemption! The warning notices required to be posted in accordance with Schedule 19 are a temporary and additional requirement meant to protect public health, the fundamental objective of this regulation. They do not relieve the owner of any regulatory requirements. The owner must still comply with the requirements of Schedule 11, 12 or 18 as soon as possible despite posting a warning notice.

Where do I post the warning notice?

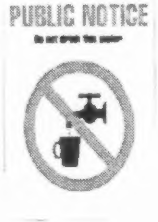
Post the notice in a prominent location where it is likely to be seen by those using water from the system. If you fail to post a warning notice at your drinking water system, a provincial officer or public health inspector may do so instead.

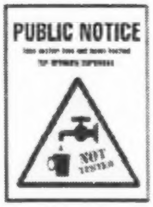
What must the warning notice say and where can I obtain them?

Warning notices must be in a form provided by or approved by the Director. There are two warning notices available from the Ministry of the Environment for the purposes of posting warning notices of potential problems. The proper notice must be used according to the specific situation described above. You may also wish to indicate where an alternate source of drinking water can be obtained, if applicable.

Use the approved notice(s).

You must post warning notices upon receiving notification of the following adverse test results or adverse conditions: improper disinfection (18-2), turbidity (18-3), chlorine residual (18-4), *Escherichia coli* (18-5), AND if corrective action has not been taken. For copies of "Warning Notice of Non-Compliance of O. Reg. 170/03", contact the Ministry of the Environment's Public Information Centre at 1-800-565-4923 or (416) 325-4000.





Step 11:
Post Warning Notices of Potential Problems

Owners are required to post a warning notice if you are not currently complying with the microbiological testing regime required by the Drinking-Water Systems Regulation (O. Reg. 170/03) or if you did not carry out the necessary corrective actions for some reason. These warning notices have to be posted in prominent locations to alert users of the system.

For copies of warning notices, contact the Public Information Centre at 1-800-565-4923 or (416) 325-4000.

Warning notices do NOT exempt you from the regulation!
The warning notices referred to on this page are a temporary and additional requirement to protect public health. They do not relieve the drinking water system owner of any regulatory requirements. The owner must still comply with the requirements as soon as possible despite posting a warning notice.

Schedule 19 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the posting of warning notices.

Step 12: Make Information Available to the Public

Under section 12 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must make certain reports and documents available on site at each drinking water system, so that interested persons may read them on request, free of charge, during normal business hours.

Section 12 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the information that must be made available.

What reports and documents must I make available to the public?

- Every test result (not older than two years) required by O. Reg. 170/03, or O. Reg. 459/00 or under an approval or order;
- Every approval and order issued (not older than two years) that applies to your drinking water system and that is still in effect, if it was issued after January 1, 2001;
- Every annual report prepared under Section 11 of O. Reg. 170/03 or under O. Reg. 459/00 for the past two years;
- A copy of the Drinking-Water Systems Regulation (O. Reg. 170/03); and
- A copy of every Engineering Evaluation Report for the past two years.

Step 13:
Prepare and Submit an Annual Report

In order that the public has access to information on the status of drinking water, an Annual Report on the operation of your drinking water system must be prepared using a prescribed format, made available to the public and submitted to the Ministry of the Environment.

The Annual Report must cover the period from January 1st through to December 31st, and the report must be submitted by February 28th of each year.

The annual report is to be submitted electronically through DWIS.

Section 11 of the Drinking-Water Systems Regulation (O.Reg. 170/03) covers Annuals Reports.

How do I prepare my Annual Report?

To make the preparation of this report as easy as possible, the Ministry of the Environment has designed an Annual Report template which MUST be used and is available on the Ministry's website through DWIS. The following is a summary of the type of information you will need to complete the Ministry's Annual Report template:

- information on your drinking water system (i.e., name and address of the drinking water system and the name and address of the owner of the drinking water system, the category of the drinking water system, the name of the local Public Health Unit, the population being served, public facilities served, the pumping capacity and a list of the water treatment chemicals used by the system during the period covered by the report);
- information on your drinking water source (groundwater, surface water or groundwater under the direct influence of surface water);
- information on the number of adverse test results during the reporting period for microbiological, chemical, chlorine residual and turbidity;
- summary of microbiological and chemical results;
- information on parameters not required during the reporting period;
- information on additional testing and sampling carried out in accordance with the requirement of an approval or an order;
- description of the corrective actions undertaken under Schedule 18;
- information on major expenses incurred during the period covered by the Annual Report (such as the cost of treatment equipment, instrumentation for measuring chlorine levels, etc.); and
- information on how the Annual Report was shared with drinking water users (for example, a copy of the Annual Report was given to every person who requested it).

Use the approved format available in DWIS.

- Submitting the Annual Report.

You must use the Ministry's Annual Report Template, which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

When is the first Annual Report due?

- If a year-round residential system was required to submit a quarterly report under O. Reg. 459/00, the first report was due February 28, 2004 and should have covered the period from April 1, 2003 to December 31, 2003.
- If a new year-round residential system not subject to O. Reg. 459/00, then the first report was due February 28, 2004 and covers the period from June 1, 2003 to December 31, 2003.

Note, if your drinking water system is connected to and receives all of its drinking water from another drinking water system, the owner of the drinking water system from which the water is obtained must ensure that the owner of the connected drinking water system is given a copy of the Annual Report.

Step 14: Retain Required Reports and Documents

Under section 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03), drinking water system owners and laboratories must keep copies of certain reports and documents on file.

If the Ministry of the Environment Director or provincial officer requests your records, you must send them within the period requested.

Section 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers record keeping.

What records must I retain? And for how long?

As a drinking water system owner, you must keep copies of the following records for at least five years:

- Every record or report of test results for microbiological parameters and operational checks, as required under section 7, Schedules 6-12 or sections 18-5 to 18-9 of Schedule 18 of O. Reg. 170/03.
- Every annual report prepared under Section 11 of O. Reg. 170/03.
- Every record or report related to a test result under an approval or order, unless the record or report relates to an organic or inorganic parameter listed in Schedule 23 or 24 of O. Reg. 170/03 or a parameter listed in Schedule 3 of the Ontario Drinking water Quality Standards Regulation (O. Reg. 169/03).
- Every record or report of test results for microbiological parameters prepared under section 7, and clause 9(b) of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003.
- Every annual report prepared under section 12 of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003.

As a drinking water system owner, you must keep copies of the following records for at least 15 years:

- Every record or report of test results for chemical parameters as required by Schedule 13 and 18 of O. Reg. 170/03.
- Every record or report related to a test result under an approval or order if the record or report relates to an organic or inorganic parameter listed in Schedule 23 or 24 of O. Reg. 170/03 or a parameter listed in Schedule 3 of the Ontario Drinking water Quality Standards Regulation (Reg. 169/03).
- Every Engineering Evaluation Report prepared under Schedule 21 of O. Reg. 170/03.
- Every record or report of test results for chemical parameters prepared under section 7 and clause 9(a) of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003.
- Every report relating to the drinking water system's raw water supply prepared under paragraph 7 of subsection 2(2) (written report concluding that the system's raw water is groundwater under the direct influence of surface water) or subsection 2(3)(a) (written report prepared after August 1, 2000, concluding that the raw water supply is not groundwater under the direct influence of surface water).
- If the owner gave the Director a written statement by a professional engineer under subsection 21-2 (3) of Schedule 21, a copy of the OWRA approval referred to in that section.

This is the second guide in a four-guide resource package.

The Ontario Ministry of the Environment has prepared a series of guides for the four categories of regulated, non-municipal drinking water systems. If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, download an electronic version from the Ministry's website at www.ene.gov.on.ca, or call our Public Information Centre at 1-800-565-4923. See the back page of this guide for other sources of information.

Guide 1, Does the Regulation Apply to Me?

Guides 2A-2D, A Guide for Regulated, Non-Municipal Drinking water Systems.

- Guide 2A, Non-Municipal Seasonal Residential Systems
- Guide 2B, Non-Municipal Year-Round Residential Systems
- Guide 2C, Small Non-Municipal Non-Residential Systems
- Guide 2D, Large Non-Municipal Non-Residential Systems

Guide 3, How to Collect Drinking Water Samples

Guide 4, Glossary of Terms

Note: reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03), the *Safe Drinking Water Act*, 2002, and the other related regulations and procedures to ascertain an owner/operator's specific legal requirements. See back cover for details.

Obtain the Specific Information You Need to Meet Your Regulatory Responsibilities.

The Resource Package for Regulated Non-Municipal Drinking water Systems contains a number of components that, together, are designed as a support tool to help owners and operators of regulated systems deliver safe, clean drinking water. Titles in this package will help you:

- ☐ determine whether the system you own or operate is regulated under O. Reg. 170/03;
- ☐ provide more detailed information for each of the four categories of regulated, non-municipal drinking water systems;
- ☐ show you how to collect samples and have them analyzed; and
- ☐ provide definitions of key technical and water management terms.

If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, or download an electronic version from the Ministry's website at www.ene.gov.on.ca.

How do I obtain the documents and contact information I need?

How can I obtain a copy of the Drinking-Water Systems Regulation and additional information on my regulatory responsibilities?	Visit the Ministry website at www.ene.gov.on.ca, click on "Water" then scroll down the page and click on "Drinking-Water Systems Regulation – Information Page" (http://www.ene.gov.on.ca/envision/water/sdwa/dwsr.htm). This will take you to a full page of links to key documents, technical updates, laboratory licencing information, legislation and regulations, forms, general information and related documents. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
How do I find a Licenced laboratory for analyzing my drinking water samples?	Check the Ministry website for a list of laboratories Licenced to perform drinking water testing under the *Safe Drinking Water Act*, available at: http://www.ene.gov.on.ca/envision/water/sdwa/Licencedlabs.htm. You can also call the Ministry of the Environment Laboratory Licencing Administrator at 416-235-6370.
How do I contact the Local Medical Officer of Health or the Public Health Unit for my community?	Check the "Blue Pages", under the heading "Health", in your local telephone directory for the listing of your public health unit. You can also visit the website of the Ministry of Health and Long-Term Care (MOHLTC) at www.health.gov.on.ca, or call the MOHLTC info-line at 1-800-268-1154, or 416-314-5518 in Toronto.
Where can I find the nearest local or regional office of the Ministry of the Environment?	Check the "Blue Pages", under the heading "Environment", in your local telephone directory. You can also visit the Ministry website at www.ene.gov.on.ca and look under the heading "About the Ministry" on the home page. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
Where can I find more information on training and certification of system operators?	Contact the Ontario Environmental Training Consortium (OETC) through its website at www.oetc.on.ca, or by telephone at 905-796-2851. For more information, the new Certification of Drinking water System Operators and Water Quality Analysts Regulation (O. Reg. 128/04) is available at: http://www.e-laws.gov.on.ca/DBLaws/Regs/English/040128_e.htm

The Ontario Drinking-Water Systems Regulation
(O.Reg. 170/03)

Guide 2C:
What are my responsibilities under O.Reg. 170/03?

A Guide for Owners and Operators of **Small Non-Municipal Non-Residential Drinking Water Systems**

Ontario Ministry of the Environment
December 2004

Protecting our environment. Ontario

This publication is provided for information purposes only.

This guide is the second guide of a four-guide kit designed to assist owners and operators of regulated non-municipal drinking water systems more fully understand their responsibilities in delivering safe, clean drinking water. However, readers are advised against using this document for compliance purposes. Reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03) and the *Safe Drinking Water Act, 2002* to ascertain an owner/operator's specific legal requirements and to determine whether or not a system is in compliance. The Act and its regulations may be obtained from Ontario's e-laws website at www.e-laws.gov.on.ca.

This Guide is for you if you are an owner or operator of a non-municipal drinking water system that:

- is not capable of supplying drinking water at a rate of more than 2.9 litres per second,
- serves a designated facility or public facility, and
- does not serve (a) a major residential development, or (b) a trailer park or campground that has more than five service connections.

This Guide is NOT for use by:

- designated facilities including children's camps, health care facilities, a delivery agent care facility, a school or private school, a social care facility, a university, college or institution with authority to grant degrees.

This Guide is designed to be user-friendly.

The right-hand, shaded column summarizes the contents of each section and highlights the basic requirements under the regulation. **You should read this first.** The left-hand side of the page contains the regulatory details needed to meet your regulatory responsibilities, as well as a reference to the appropriate section on the regulations. It is recommended that you refer to the text of the regulation itself for full compliance instructions.

Sources of additional information, including the other guides in this resource package, are also provided.

Remember, this guide is only a summary tool.
To be clear about your specific legal requirements, you must refer to the text of the Drinking-Water Systems Regulation (O.Reg.170/03) and the *Safe Drinking Water Act, 2002.* You can access these at www.ene.gov.on.ca under the section on Water, or by calling our Public Information Centre at 1-800-565-4923.

How Does The Kit Work?

This Kit for Regulated Non-Municipal Drinking Water Systems contains a number of Guides that, together, are designed to help owners and operators of regulated systems deliver safe, clean drinking water.

The Kit is made up of 4 Guides:

Guide 1: Does the Regulation apply to me?

Guide 2: What are my responsibilities under O. Reg 170/03?

(There are 4 versions of Guide 2, one for each of the non-municipal drinking water categories as defined in O. Reg 170/03. Refer to Guide 1 to determine which category your system falls into and whether you should use Guide 2a, 2b, 2c or 2d.)

Guide 3: How to Collect Drinking Water Samples

Guide 4: Glossary of Terms

Checklist for owners and operators of regulated small non-municipal non-residential drinking water systems

Step 1: Register Your Drinking Water System.

☐ Where do I register my drinking water system?
☐ What must I complete and submit to register my system?

Step 2: Select a Licenced Laboratory to Analyze Your Drinking Water Samples.

☐ How do I choose a licenced laboratory for testing my drinking water samples?
☐ How can I find out if a laboratory is licenced for specific testing?

Step 3: Know and Meet Your Sampling and Testing Requirements.

☐ What procedures must I follow when samples are collected?
☐ What are my microbiological sampling and testing requirements?
☐ What are my chemical sampling and testing requirements?
☐ Also refer to Step 7 to learn the Operational Checks required

Step 4: Provide A "Minimum Level of Treatment."

☐ What are the minimum treatment requirements?
☐ What are the requirements for Groundwater Supplies?
    - Primary Disinfection
☐ What are the requirements for Surface Water (or a GUDI Source) Supplies?
    - Filtration and Primary Disinfection
    - Secondary Disinfection
☐ Can I use point of entry treatment units?
☐ What are the deadlines for providing treatment equipment?
☐ Do I need to submit written notice of my intentions?

Step 5: Have an Engineering Evaluation Report Completed and Submit Written Notice to the Ministry of the Environment.

☐ What must my Engineering Evaluation Report cover and who must complete it?
☐ When is my Engineering Evaluation Report Due?
☐ When must I submit a written notice to the Ministry?
☐ When must I submit subsequent Engineering Evaluation Reports?
☐ What exemptions are available?

Step 6: Have a 'Trained Person' Adjust Equipment and Conduct Operational Checks.

☐ Who can operate my drinking water system and conduct operational tests?
☐ What duties must be performed by a 'trained person'?
☐ What courses are available to qualify as a 'trained person'?
☐ What courses are recognized and approved by the Ministry of the Environment for Water Quality Analysts?

Let's Get Started.

As an owner/operator of a regulated small non-municipal non-residential drinking water system[1], you have an obligation to familiarize yourself with your duties under Ontario's Drinking-Water Systems Regulation (O. Reg. 170/03) and the other associated regulations and procedures that govern drinking water systems. This guide explains each of the regulatory requirements that apply to you, including:

- Registering your drinking water system
- Selecting a licenced laboratory
- Meeting sampling and testing requirements
- Installing treatment equipment to meet a minimum level of treatment
- Preparing Engineering Evaluation Reports and written notices
- Using trained persons
- Conducting operational checks
- Notifying authorities of adverse test results and other problems
- Taking corrective action
- Posting warning notices
- Making required information available

Continued...

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[1] According to section 1 of the Drinking-Water Systems Regulation (O. Reg. 170/03), a "small non-municipal non-residential system" means a non-municipal drinking water system that is not capable of supplying drinking water at a rate of more than 2.9 litres per second, serves a designated facility or public facility and does not serve (a) a major residential development, or (b) a trailer park or campground that has more than five service connections.

Step 7: Undertake operational checks.

☐ What operational checks must I undertake?
☐ How do I test for turbidity?
☐ How do I test for residual chlorine?
☐ What exception exists for small non-residential systems?
☐ What are my monitoring and reporting requirements?

Step 8: Determine if You Can Apply for Full Relief from Requiring Any Treatment.

☐ Who can apply for full relief from treatment requirements?
☐ How do I apply?
☐ Must I consult with the users of my system?
☐ What exemptions from providing treatment, testing, etc. exist under section 8?
☐ What exemptions exist for non-residential systems (under section 6)?
☐ What exemptions exist for non-residential systems receiving transported water (under section 7)?

Step 9: Notify Authorities of Adverse Test Results and Other Problems.

☐ What adverse test results and other problems must I report?
☐ Who must I notify and how must I notify them of these problems?

Step 10: Take Corrective Action.

☐ What corrective actions must I take when adverse test results are received or other problems are observed?

Step 11: Post Warning Notices of Potential Problems.

☐ When is it necessary to post a warning notice?
☐ Where do I post the warning notice?
☐ What must the warning notice say and where can I obtain them?

Step 12: Make Information Available to the Public.

☐ What reports and documents must I make available to the public?

Step 13: Prepare and Submit an Annual Report.

☐ How do I prepare my Annual Report?
☐ When is the first Annual Report due?

Step 14: Retain required reports and documents.

☐ What records must I retain? And for how long?

- Submitting an annual report
- Retaining required records

The guide also clarifies an option that exists in the regulation that can allow you to apply for full relief from treatment requirements. Step 8 will help you determine if you can apply for such relief.

Where do I register my drinking water system?

You must categorize your drinking water system under the Drinking-Water Systems Regulation (O. Reg. 170/03), and register it on the Ministry of the Environment's Drinking Water Information System (DWIS). Registration on this system also gives you the access you will need to make submissions to the Ministry as specified by the provisions of O. Reg. 170/03.

The Drinking Water Information System (DWIS) gathers, in one place, information about municipal and non-municipal drinking water systems across the province. This information will help the province, municipalities, non-municipal systems and licenced laboratories meet our shared commitment to safe, clean drinking water for the people of Ontario.

Once you have finished registration, you will be able to log into DWIS at www.ene.gov.on.ca/environet/DWIS/index.htm.

What must I complete and submit to register my system?

To register, the Drinking Water System owner has to make a submission that includes the completion of:

- A *Drinking Water System Categorization* questionnaire,
- A *Drinking Water System Profile* questionnaire, and
- A *Laboratory Services Notification Form.*

To access the Drinking Water Information System Registration, go to www.ene.gov.on.ca/environet/DWIS/index.htm. Follow the onscreen instructions as you complete the submissions.

The Ministry of the Environment requires electronic submission of information. However, you may be authorized to make paper submissions under special circumstances (e.g. if you do not have internet access). For more information, refer to Guide 1 under 'Registration.'
To speak with someone at the registration desk, call 1-866-793-2588.

Step 1:
Register Your Drinking water System

You must register your drinking water system on the Ministry of the Environment's Drinking Water Information System (DWIS) before June 1, 2005. You must complete the *Drinking Water System Categorization*, and *Drinking Water System Profile* questionnaires along with a *Laboratory Services Notification Form.* You can do this one of three ways:

1. To register online, go to the Ministry's homepage at www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System. Follow the on-screen instructions.
2. To access DWIS and obtain more information, you can also visit your local Government Information Centre. To find a Centre near you, call 1-800-267-8097 toll free.
3. You may be authorized to make paper submissions under special circumstances (i.e. if you do not have internet access).

Refer to Guide 1 for more details on registration.

Step 2:
Select a Licenced Laboratory to Analyze Your Drinking Water Samples

When you send the drinking water samples that are required by the Drinking-Water Systems Regulation to a laboratory for testing, the testing must be carried out by a laboratory that is licenced by the Ministry of the Environment for each specific parameter being tested. While some laboratories may be licenced to test for all the microbiological and chemical parameters required by the Regulation, others may be licenced to test only microbiological parameters and/or only some chemical parameters.

How do I choose a licenced laboratory for testing my drinking water samples?

When you send your drinking water samples to a laboratory for analysis, there are a number of conditions you and the laboratory must meet. It is up to you to ensure each of the following:

- The laboratory must be licenced by the Ministry to test for the specific parameter(s) you need analyzed. A licenced laboratory must use accredited testing methods for each parameter it tests. Licenced laboratories are required to meet strict conditions in order to be licenced for the testing of specific parameters by the Ministry of the Environment. Each laboratory is inspected by the Ministry's Specialized Laboratory Inspectors at least twice a year.

- Laboratories may accept your samples but then may need to sub-contract them to an appropriately licenced laboratory. They must have your written permission to do so.

- As of October 1, 2003, if the laboratory performing the analysis is located outside Ontario, then ensure they are on a list of eligible out-of-province laboratories (check with the Ministry of Environment through the Ministry's website at: http://www.ene.gov.on.ca/envision/water/sdwa/licencedlabs.htm or by contacting the Ministry's Service Desk at 1-866-494-6663)

- You must submit a written notice to the Ministry of the Environment identifying the licenced laboratory(ies) that will be carrying out the testing before you send your samples to the laboratory(ies) for the first time. Once you have submitted the *Laboratory Services Notification Form* you do not have to submit it again unless you change a laboratory or you change the testing services provided by a laboratory. Laboratories will assist you with completing this submission to ensure that the correct information is submitted.
  Note: It is strongly recommended that owners include a back-up laboratory on their *Laboratory Services Notification Form* in case the primary laboratory encounters unforeseen equipment/testing problems.

- It is the responsibility of the licenced laboratory to ensure that they send a written report to you or the operator of the drinking water system and an electronic report to the Ministry of the Environment of all required test results within 28 days of your drinking water samples being analyzed and the data being approved.

How can I find out if a laboratory is licenced for specific testing?

1. View the list of licenced laboratories on the Ministry's web site: http://www.ene.gov.on.ca/envision/water/sdwa/licencedlabs.htm , or
2. Contact the Public Information Centre at 1-800-565-4923 or (416) 325-4000, or
3. Contact a laboratory directly and ask them what they are licenced to test for.

Notify the Ministry about the Licenced Laboratories you have selected using DWIS.

You must notify the Ministry of the Environment when you have selected the laboratories that will carry out the analyses of your drinking water samples. Notice must be made using the approved submission - *Laboratory Services Notification Form* - that is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

What procedures must I follow when samples are collected?

- Whenever a sample is collected, the person taking the sample must record the date and time the sample was taken, the location where the sample was taken, and the sampler's name on the *Laboratory Chain-of-Custody Form*. (This form can be obtained directly from the Drinking Water Information System or you can obtain a Ministry-inspected Chain-of-Custody Form from the laboratory conducting the tests. The laboratory's form will be customized for the drinking water system and sent to the sampler with the sampling containers.) In addition, a licenced laboratory will record the date and time the sample was tested, the results of the tests and the name of the person who conducted the tests.
- You must discuss and make contractual agreements with the licenced laboratories that perform the analytical tests for microbiological and chemical parameters. How often the samples have to be collected, and from where, depends on the type of test being performed. Laboratories must provide you with instructions on proper techniques for sample collection, transport storage and preservation, and will supply the appropriate containers.
- You must ensure that samples for microbiological testing are kept between 4 - 10 °C until they are delivered to the laboratory. Do not freeze samples.

Note: If you operate a small non-residential drinking water system, you do not have to perform operational checks, sampling and testing for microbiological or chemical parameters until June 1, 2005. This does not apply to a drinking water system that serves a designated facility.

What are my microbiological sampling and testing requirements?

How often to collect samples (at a minimum), only during the operating season

- Raw water samples: once a month
- Distribution samples: once every week if not chlorinating[2] or chloraminating, or once every two weeks if chlorinating or chloraminating,

Specific parameters for testing

- *E. coli* or fecal coliforms
- Total coliforms
- HPC or total coliform background count by membrane filter analysis (only in distribution samples)

Where to collect samples

- Raw water samples: raw water source (i.e. lake, river, etc.) and if using groundwater, then from each well.

Step 3:
Know and Meet Your Sampling and Testing Requirements

Previous drinking water regulations provided for tough monitoring standards and these are continued in the Drinking-Water Systems Regulation (O. Reg. 170/03). The sampling and testing requirements – for bacteria, including *E. coli*, and chemicals, such as PCBs and pesticides – have been designed to reflect the size and population served and the needs of each of the categories of drinking water systems

The collection and transport of drinking water samples could affect the accuracy of your test results!
See Guide 3 of this Resource Package for step-by-step instructions on how to properly collect drinking water samples.

Schedule 12 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Microbiological Sampling and Testing Requirements.

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[2] If, for a period of 24 consecutive months, the presence of *E. coli*, fecal coliforms, or total coliforms are confirmed in drinking water samples on no more than one occasion (as described in Schedule 1 of the Drinking water Quality Standards Regulation O. Reg. 169/03), then the sampling frequency may be reduced to: once every 2 weeks if not chlorinating or not chloraminating, or once every four weeks if chlorinating or chloraminating. However, if, on any two or more occasions drinking water samples confirm the presence of *E. coli*, fecal coliforms, or total coliforms in a 24-month period (see Schedule 1 of the Drinking water Quality Standards Regulation O. Reg. 169/03), then you must immediately return to the original sampling frequency as described in this table. A written notice of the intention to reduce testing frequencies must also have been given to the Director at least 7 days before the reductions come into effect (refer to the Ministry's Web site at www.ene.gov.on.ca for the approved notice)

- Distribution samples: from the distribution system or plumbing

Who performs analysis for parameters
- A laboratory licenced to test the parameter

By what date first samples must be taken
- June 1, 2005
- Within one week of commencing operation of new system where chlorine is not used.
- Within two weeks of commencing operation of new system where chlorine is used.

Note: If your drinking water system is not in operation for seven days or more, or if for such a period the system supplies water only to the private residences that are occupied by the owner of the system, members of the owner's family, employees or agents of the owner of the system or their families, you are not required to perform microbiological sampling and testing during that period. However, upon restarting your system you must sample and receive the results prior to supplying drinking water to users of the system.

What are my chemical sampling and testing requirements?

How often to collect samples (at a minimum), only during the operating season
It varies depending on the parameter (see Schedule 15)
- All organic and inorganic parameters listed in Schedules 23 and 24 of O. Reg. 170/03: once every 60 months (only those small non-residential systems that serve a designated facility)
- Nitrate and nitrite: once every 3 months
- Sodium and Fluoride: every 60 months
- Lead: every 60 months

Where to collect samples
Point where water enters the distribution system or plumbing, except for:
- Lead: the sample must be taken from a remote point in the distribution system that is likely to have an elevated concentration of lead

Who performs analysis for parameters
A laboratory licenced to test the parameter

By what date first samples must be taken:
If testing was previously done under Regulations 459/00 or 505/01 or under an OWRA approval or order, within the period of time set by the Regulation after the date of the last sample;
For new systems that have not done chemical testing described in the previous bullet, within the period of time set by the Regulation or 12 months, whichever is shorter.

Note: If your drinking water system is not operating for 60 or more consecutive days, or if for such a period the system supplies water only to the private residences that are occupied by the owner of the system, members of the owner's family, employees or agents of the owner of the system or their families, you are not required to perform sampling and testing for nitrate and nitrite during that period.

Schedule 15 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Chemical Sampling and Testing Requirements.

What are the minimum treatment requirements?

- As a drinking water system owner, you must treat your water by the date specified in Schedule 2 of the Drinking-Water Systems Regulation (O. Reg. 170/03) for your system's category, unless you APPLY FOR RELIEF (refer to the section on Relief later in this Guide).

What are the requirements for Groundwater Supplies?

- **Primary Disinfection**

You must ensure that you provide water treatment equipment that is capable of achieving, at all times, at least 99 per cent removal or inactivation of viruses in accordance with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario."

What are the requirements for Surface Water (or a GUDI[3] Source) Supplies?

- **Filtration and Primary Disinfection**

You must ensure that you provide water treatment equipment that is capable of achieving, at all times, removal or inactivation of :

- 99 per cent of *Cryptosporidium* oocysts,
- 99.9 per cent of *Giardia* cysts, and
- 99.99 per cent of viruses.

in accordance with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario".

If you are using UV or other non-chlorine-based primary disinfection equipment, you must ensure that the equipment has a feature that causes an alarm to sound in the building where the disinfection equipment is located, at a location where a person is present (if a person is not always present at the building where the disinfection equipment is located) and in any designated facilities served by the system, when:

- equipment malfunctions;
- equipment loses power; or
- the disinfection equipment is not providing the appropriate level of disinfection.

If an alarm sounds, a "trained person" must be dispatched to take appropriate action and must arrive at the building where the disinfection equipment is located as soon as possible.

- **Secondary Disinfection**

Water treatment equipment must be capable of:

- secondary disinfection using chlorination or chloramination in accordance with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario"; and
- achieving at all locations within the distribution system a free chlorine residual of 0.2 mg/L (if chlorinating), or a combined chlorine residual of 1.0 mg/L (if chloraminating).

Step 4:
Provide A "Minimum Level of Treatment"

You have the flexibility to select any treatment technology that meets the performance-based criteria established in Schedule 2 of the Drinking–Water Systems Regulation (O. Reg. 170/03).

To meet the Regulation's mandatory treatment requirements, you must, at the very least, ensure that:

- wells are constructed and maintained to prevent surface water and other foreign materials from entering them;
- appropriate water treatment equipment is provided;
- water treatment equipment is operating whenever water is being supplied;
- water treatment equipment is operated as outlined in the Ministry's "Procedure for Disinfection of Drinking Water in Ontario";
- water treatment equipment is operated such that it achieves the design capabilities it is required to have;
- water treatment equipment is properly maintained;
- written operating instructions for the water treatment are kept near the equipment;
- adequate supplies of chemicals (or other materials necessary for operating the water treatment equipment) are: (a) clearly marked; (b) kept nearby the equipment; (c) separated from other chemicals and materials that are not used for the water treatment or distribution system.
- treatment or distribution system;
- replacement parts (for those parts that need to be replaced periodically) are kept nearby; and
- treatment equipment is operated by a 'trained person.'

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[3] A groundwater source under the direct influence of surface water, as defined in O. Reg. 170/03. Refer to Guide 1 (Does the Regulation Apply to Me?) for more information.

Can I use point of entry treatment units (small non-residential only)?

Point of entry treatment units can be used for the purpose of meeting the treatment requirements of the Regulation. If you are considering using a point of entry approach to provide disinfection for your drinking water system, please refer to the specific requirements in the Regulation related to using point of entry units. Systems that use point of entry units in accordance with the Regulation do not have to provide secondary disinfection.

Schedules 2 and 3 of the Drinking-Water Systems Regulation (O. Reg. 170/03) cover minimum levels of treatment for drinking water systems and point of entry treatment.

What are the deadlines for providing treatment equipment?

If your drinking water system was operating before O. Reg. 170/03 came into effect on June 1, 2003, the deadline for providing treatment equipment is:

- December 31, 2006, if your drinking water system obtains water from either a surface water source or a groundwater source.
- New systems must meet the treatment requirements immediately upon the commencement of operations.

Note, the compliance dates specified in an existing approval under the *Ontario Water Resources Act* or orders in relation to a requirement to install treatment equipment take precedence over the compliance dates in the Regulation.

Do I need to submit written notice of my intentions?

If you have already notified the Ministry of the Environment of the completion of the Engineering Evaluation Report or submitted an application for relief from the requirements for provision of treatment equipment by July 1, 2006, then you do not need to submit this notice.

Otherwise, you must submit a written notice to the Ministry of the Environment Director on the approved submission by July 1, 2006, that includes one of the following three declarations:

1. You intend to comply with the requirements for treatment equipment by the specified deadline, OR
2. You intend to make an application for relief from some or all of the requirements for provision of treatment equipment (submit using DWIS), OR
3. You intend to post warning notices and take the other steps necessary to obtain the exemption provided by section 8 of the Regulation (submit using DWIS).

Notify the Ministry using DWIS.

Written notice of your intent to comply with the treatment requirements or of your intent to apply for relief must be made using the approved notice -- *Notification of Intent to Comply with Treatment Requirements* -- which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

Step 5:
Have an Engineering Evaluation Report Completed and Submit Written Notice to the Ministry of the Environment

As the owner/operator of a regulated small non-municipal non-residential drinking water system, you must ensure that a professional engineer certifies that the system is in compliance with the regulatory requirements.

The engineer must prepare an Engineering Evaluation Report for you. In turn, you must submit a notice, using DWIS, to the Ministry of the Environment within 7 days of the completion of the report. This certification has to be renewed every five years for surface water systems and every 10 years for groundwater systems.

These requirements replace the need to obtain a certificate of approval as was the case under the *Ontario Water Resources Act* approval.

The required *Engineering Evaluation Report Notice* is available through DWIS. Access it from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

What must my Engineering Evaluation Report cover and who must complete it?

The Report must certify that a professional engineer[4] has visited your drinking water system and include the engineer's opinion that all equipment needed to comply with the treatment requirements (in accordance with Schedule 2 of O. Reg. 170/03) is being provided, as well as all the equipment needed to comply with the operational checks provisions (in Schedules 6 and 9). As a minimum, in order to comply with Schedule 21 of the Regulation, a Report must:

1. specify the category of drinking water system under O. Reg. 170/03;
2. include the opinion of the engineer that all equipment has been provided in compliance with Schedules 2, 6, and 9;
3. set out the engineer's reasons for the opinion, along with the technical and other information he or she relied on in reaching that opinion; and
4. include a maintenance schedule that sets out requirements relating to the frequency at which the equipment must be inspected, tested and replaced.

You must ensure that the professional engineer that prepares the Engineering Evaluation Report has experience in sanitary engineering.

When is my Engineering Evaluation Report due?

If your drinking water system began operating on or after June 1, 2003, you must ensure that a professional engineer submits to you an Engineering Evaluation Report within 30 days of your new drinking water system beginning operation.

If your drinking water system began operating before June 1, 2003, you must ensure that a professional engineer submits to you an Engineering Evaluation Report:

- no later than January 30, 2007 for both surface water and groundwater systems.

Do not submit the Engineering Evaluation Report to the Ministry, but keep it on file to be made available upon request.

When must I submit a written notice to the Ministry?

Within seven (7) days after the date the Engineering Evaluation Report is required to be prepared, you must submit a written notice to the Ministry of the Environment Director using an approved notice in DWIS regarding the engineering evaluation report and include a copy of the engineer's opinion regarding your drinking water system's compliance.

Notify the Ministry using DWIS

Written Notice must be made using the approved submission which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

- *Notice of Completion of an Engineering Evaluation Report for Existing System*
- *Notice of Completion of an Engineering Evaluation Report for New or Altered Systems*
- *Declaration of Professional Engineer to be Included Within an Engineering Evaluation Report*

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[4] According to section 1 of the Drinking-Water Systems Regulation (O. Reg. 170/03), "professional engineer" means a professional engineer as defined in the *Professional Engineers Act*

When must I submit subsequent Engineering Evaluation Reports?

As a drinking water system owner, you must also ensure that a professional engineer prepares and submits to you Engineering Evaluation Reports not later than:

- five (5) years from the date your last Engineering Evaluation Report was prepared or required to be prepared (the earlier of the two) if your drinking water system obtains water from a surface water source.
- ten (10) years from the date your last Engineering Evaluation Report was prepared or required to be prepared (the earlier of the two) if your drinking water system obtains water from a groundwater source.
- If you alter[5] your drinking water system ("alteration", as defined in the *Safe Drinking Water Act*, does not include repairs), then you must ensure that a professional engineer submits to you an Engineering Evaluation Report within 30 days of commencing operation of the altered system.

Notices are also required to be submitted to the Ministry at these times.

What exemptions are available?

- If you have already prepared and submitted to the Ministry of the Environment (MOE) Director an Engineering Evaluation Report under Regulation 505/01, you are exempt from preparing your first Engineering Evaluation Report and submitting a written notice to the MOE Director.

- If you have been granted an approval after August 1, 2000, under section 52 of the *Ontario Water Resources Act* (Certificate of Approval), you are exempt from preparing your first Engineering Evaluation Report and submitting a written notice to the MOE Director.

- However, if you have been granted an approval under *Ontario Water Resources Act* after August 1, 2000, you must have an engineer prepare a statement certifying that she or he has visited the system and that equipment required by Schedules 2, 6 and 9 of the Regulation is being provided (see Schedule 21 for more details). The Regulation provides that the *Ontario Water Resources Act* approval is revoked on the date the owner submits this statement to the Director, which means the drinking water system will no longer be subject to the requirements of the *Ontario Water Resources Act* approval – and will, instead, be regulated by the Drinking-Water Systems Regulation under the *Safe Drinking Water Act*.

- If you have been granted relief, under O. Reg. 170/03, by the MOE Director from complying with all requirements to provide treatment equipment you are exempt from preparing an Engineering Evaluation Report and submitting this written notice to the MOE Director.

Schedule 21 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the preparation of Engineering Evaluation Reports and the submission of the required notices to the Ministry.

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[5] According to section 2 of the *Safe Drinking Water Act*, "alteration" includes the following, in respect of a drinking water system, but excludes repairs to the system: (1) an extension of the system, (2) a replacement of part of the system, (3) a fragmentation of the system, and (4) taking all or part of the system permanently out of service

Who can operate my drinking water system and conduct operational tests?

Your system is defined as a **'small non-municipal non-residential'** and therefore you require a 'trained person' under O. Reg. 170/03 to operate your drinking water system and conduct operational tests. A 'trained person' is a person who completes a Director-approved course every 36 months. More information about appropriate courses is provided on the next page. A person who holds a valid Water Treatment, Water Distribution, Water Distribution and Supply or a Limited Water Certificate is also considered a 'trained person'.

You are required to have a 'trained person' to operate your system by the date O.Reg. 170/03 requires you must have installed new treatment equipment. Drinking water systems in **the small non-municipal non residential category** must install treatment equipment by December 31, 2006 for both surface water sources, and groundwater sources.

Since new systems must immediately comply with the treatment requirements, your new system will require having a 'trained person' immediately as well.

What duties must be performed by a 'trained person'?

O. Reg. 170/03 requires that the following duties be performed by a trained person in systems such as yours:

- make all adjustments to the water treatment equipment;
- examine, within 72 hours after the tests are conducted, the results of continuous monitoring equipment;
- be promptly dispatched to the drinking water system if alarms sound as a result of equipment malfunction or loss of power or a test result which is above the maximum or below the minimum alarm standards established by the Regulation;
- perform all total chlorine residual, free chlorine residual, turbidity or fluoride testing required (A water quality analyst may also be used to carry out certain required operational tests such as these tests); and
- perform regular checks on water treatment equipment to confirm proper functioning.

What courses are available to qualify as a 'trained person'?

To verify that a person employed in a water system is a "trained person", course certificates clearly indicating the date, course title, training organization and course duration must be maintained and be available upon request by the Ministry of the Environment.

The following courses have been approved by the Ministry of the Environment as meeting the requirements of a 'trained person':

- *Operation of Small Drinking Water Systems* (formerly titled Small Seasonal Drinking Water Systems) – correspondence course available through the Ministry of the Environment (905-796-2951)
- *Small Water Systems Operation and Maintenance* –Correspondence course from California State University (916-278-6142) www.owp.csus.edu

Step 6:
Have A 'Trained Person' Adjust Equipment and Conduct Operational Checks

Owners of drinking water systems that fall within the small non-municipal non-residential category must have a 'trained person' as specified under the *Safe Drinking Water* Act to operate their system. The duties that the "trained person" must perform are listed in the main text on this page.

A 'trained person' designation is obtained through completion of a Director-approved course every three years. For more information go to www.oetc.on.ca. (Note: A 'certified operator' under O. Reg. 128/04 is automatically considered a 'trained person'.)

A water quality analyst may also be used to carry out certain required operational tests such as performing total chlorine residual, free chlorine residual, turbidity or fluoride testing.

A "water quality analyst" means a person who holds a water quality analyst's certificate, issued under O. Reg. 128/04. To qualify for this certificate a person must meet certain education and experience requirements and pass an exam for one of the courses recognized and approved by the Ministry of the Environment, outlined in

- *Water Treatment Plant Operation* – A correspondence course from California State University (916-278-6142) www.owp.csus.edu
- Any combination of American Water Works Association (AWWA) on-line learning courses totaling 18 hours or more (1-800-926-7337) www.awwa.org
- Any drinking water correspondence or related course offered through the Northern Alberta Institute of Technology (1-800-661-4077) www.nait.ab.ca

Any water treatment course offered through the following organizations provided the course is 1.8 Continuing Education Units (approximately 3 days) or more in duration; includes a final written test by the student, and includes topics on public health risks associated with untreated water, disinfection, sampling and testing procedures, emergency measures, and applicable regulations:

- any Ontario Community College drinking water course
- Canadian Enviro-Courses – (705-645-9570), www.cecourses.on.ca
- Electrical & Utilities Safety Association – (1-800-263-5024) www.eusa.on.ca
- Environmental Training Institute – (905-892-1177) http://mywebpage.netscape.com/etivc/eti.html
- Lexicon Environmental Consulting – (905-829-9055), e-mail: lexicon@.ca.inter.net
- Ontario Good Roads Association – (905-795-2555) www.municipalengineers.on.ca
- Tangible Skills Training – (905-878-1664) www.tangibleskills.ca
- Technical Learning Courses – (519-740-1222) www.hometown.aol.ca/Tlearncourses/tlcourse.htm
- Ontario Water Operators Training Centre – (519-255-2888, ext. 816) www.owotc.com

Other courses may be approved by the Ministry upon review of the course content, duration, objectives and training manual. For further information go to www.oetc.on.ca

What courses are recognized and approved by the Ministry of the Environment for Water Quality Analysts?

For information on the requirements for a Water Quality Analyst, please refer to the *Certification Guide for Operators and Water Quality Analysts of Drinking Water Systems*. This guide covers how to obtain a Water Quality Analyst Certificate and the requirements for certificate renewal. You can access this guide by going to the Ministry of the Environment web site at www.ene.gov.on.ca, clicking on the Water section and going to Research and Publications.

the *Certification Guide for Operators and Water Quality Analysts of Drinking Water Systems* which you can access by going to www.ene.gov.on.ca, clicking on the Water section and going to Research and Publications.

What operational checks must I undertake?

In accordance with Schedule 9 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must ensure that a trained person performs a regular operational check to ensure that all water treatment equipment is properly functioning, as specified in the maintenance schedule of the Engineer's Evaluation Report.

You must ensure that a trained person or water quality analyst samples and tests your water for turbidity, and free residual chlorine or combined chlorine residual, if applicable. Operational checks for turbidity and chlorine residual should be conducted on-site. They cannot be sent to a laboratory for analysis unless the laboratory is located nearby.

Whenever a sample is taken, the person taking the sample must record the date and time the sample was taken, the location the sample was taken, the name of the person who performed the test, and the results of the test. In addition, the record should include the date and time the sample was tested and the results of the tests (and the name of the person who conducted the test, if this is a different person from the person who took the sample).

Note: You may have a person other than a trained person or water quality analyst perform operational checks, but only until your treatment deadline comes into effect (December 31, 2006 for both surface water sources, and groundwater sources).

Note: If your small non-residential drinking water system is classified under this category, you do not have to perform operational checks, sampling and testing for microbiological or chemical parameters until June 1, 2005. This does not apply to a drinking water system that serves a designated facility. Drinking water systems that serve designated facilities have been required to perform operational checks, sampling and testing for microbiological and chemical parameters under O. Reg. 170/03 since June 1, 2003.

How do I test for turbidity? (at least once a day)

Surface Water Using Filtration:

If continuous monitoring equipment is required on filtration equipment (i.e. direct filtration, conventional filtration, Diatomaceous Earth Filtration and membrane filtration – see procedure for disinfection) to comply with the treatment performance requirements of Schedule 2, you must ensure that sampling and testing for turbidity is conducted by continuous monitoring equipment on each filter effluent line. If continuous monitoring equipment is not required, (if you use slow sand filters or cartridge filters – see procedure for disinfection), then you must ensure that a daily water sample is taken on each filter effluent line and tested for turbidity.

Other:

No other operational checks for turbidity are required. When testing for turbidity, a turbidity meter that measures turbidity in Nephelometric Turbidity Units (NTUs) must be used. See Schedule 6 of the Regulation.

How do I test for residual chlorine?

Primary Disinfection – Chlorination:

A sample shall be collected at least once per day and immediately tested for free chlorine residual in the treatment process at the end of contact time as required in the Ministry's "Procedure for Disinfection of Drinking Water in Ontario."

Step 7:
Undertake Operational Checks

Please note that every time a water sample is collected for microbiological testing, a measurement of free chlorine residual (where chlorination is provided) or combined chlorine residual (where chloramination is provided) must be conducted at the same time and same location and noted on the *Laboratory Chain-of-Custody Form*. This measurement of chlorine residual taken with a microbiological sample can satisfy a daily requirement to test for chlorine residual under the Regulation.

Schedule 9 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers operational checks.

Secondary Disinfection – Chlorinating or Chloramination:
Samples shall be collected from the distribution system, at least once every day and immediately tested for free chlorine residual or combined chlorine residual.

What exception exists for small non-residential systems?

Small non-residential systems are not required to conduct operational checks on days when all designated facilities and all public facilities are not open. Section 3 of the Drinking-Water Systems Regulation states that a public facility is open on a day unless persons served by the facility are denied access to the facility during the entire day. A place that is both a designated facility and a public facility is open on a day when either the designated facility or the public facility is open.

What are my monitoring and reporting requirements?

Compliance Calendar for Periodic Monitoring & Reporting Requirements

FREQUENCY	MONITORING WATER QUALITY AND PROPER FUNCTIONING OF EQUIPMENT	PREPARING AND RECEIVING RECORDS/REPORTS	DISTRIBUTING AND RETAINING (ON-FILE) REPORTS/RECORDS
At least once a day	**Measure free chlorine residual (if using chlorination)** **Primary Disinfection (Chlorination)** ◆ Ensure that a water sample is collected and tested immediately for free chlorine residual at least once every day in the treatment process at the end of contact time in accordance with the Ministry's *"Procedure for Disinfection of Drinking Water in Ontario."* ◆ If the system uses chloramination, sampling and testing for combined chlorine residual is to be carried out by continuous monitoring equipment. **Secondary Disinfection** ◆ Ensure that a distribution sample is taken at least once every day and is tested immediately for free chlorine residual (if system provides chlorination) or for combined chlorine residual (if the system provides chloramination). (Reg. Schedule 9)	◆ For each sample, make a record of the date and time the sample was tested, the name of person who performed the test and the test results and note them on the *Laboratory Chain-of-Custody Form* if the test was done on a microbiological sample submitted to a licenced laboratory. (Reg. Schedule 6)	◆ Keep every record made on free chlorine residual or combined chlorine residual tests for at least 5 years. (Reg. Section 13)

What are my monitoring and reporting requirements?

Compliance Calendar for Periodic Monitoring & Reporting Requirements

FREQUENCY	MONITORING WATER QUALITY AND PROPER FUNCTIONING OF EQUIPMENT	PREPARING AND RECEIVING RECORDS/REPORTS	DISTRIBUTING AND RETAINING (ON-FILE) REPORTS/RECORDS
Surface Water Using Filtration Continuously, if using continuous monitoring equipment At least once a day if not required to use continuous monitoring equipment	**Measure turbidity** **Small Non-Residential** **Surface Water Using Filtration** ◆ If continuous monitoring equipment is required, ensure the sampling and testing for turbidity is conducted by continuous monitoring equipment on each filter effluent line. ◆ If continuous monitoring is not required, at least one sample per day shall be collected and immediately tested for turbidity on each filter effluent line. (Reg. Schedule 9)	◆ For each sample collected, make a record of the date and time the sample was tested, the name of person who performed the test and the test results. (Reg. Schedule 6)	◆ Keep every record made on turbidity tests for at least 5 years. (Reg. Section 13)
Once every two weeks if chlorinating Once a week if not chlorinating	**Test for microbiological parameters in treated water** Collect treated samples from the distribution system or plumbing. Send samples to a laboratory licenced to test (i) *E. coli* or fecal coliforms, (ii) total coliforms and (iii) HPC (Reg. Schedule 12)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 5 years. (Reg. Section 13)
Frequency specified in maintenance schedule of Engineer's Evaluation Report	**Check of Treatment Equipment** ◆ Ensure that a trained person checks all water treatment equipment to confirm that it is functioning properly. (Reg. Schedule 9)	◆ For each equipment check, make a record of the date and time, the name of the person who performed it, and the results. (Reg. Schedule 9)	◆ Keep every record of an Operational Check made for at least 5 years. (Reg. Section 13)
Once a month	**Test for coliforms in raw water** ◆ Collect raw water samples from the untreated water source; and IF using groundwater, then from each well. ◆ Send samples to a laboratory licenced to test (i) *E. coli* or fecal coliforms, and (ii) total coliforms. (Reg. Schedule 12)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 5 years. (Reg. Section 13)
Every 3 months	**Test for Nitrate and Nitrite** ◆ Send samples to a licenced laboratory for testing. Not required if during a period of 60 or more consecutive days, the system is not in operation or if the system is only serving the owner or the agents of the owner. (Reg. Schedule 15)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)

What are my monitoring and reporting requirements?

Compliance Calendar for Periodic Monitoring & Reporting Requirements

FREQUENCY	MONITORING WATER QUALITY AND PROPER FUNCTIONING OF EQUIPMENT	PREPARING AND RECEIVING RECORDS/REPORTS	DISTRIBUTING AND RETAINING (ON-FILE) REPORTS/RECORDS
Every 5 years	**Test for lead** ◆ Collect samples from the point in the distribution system that is likely to have an elevated concentration of lead. Send samples to a licenced laboratory for testing. (Reg. Schedule 15)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
(if the system serves a designated facility) Every 5 years	**Test for all organic and inorganic parameters listed in Schedules 23 and 24 of the Drinking-Water Systems Regulation** ◆ Collect samples from the point where water enters the distribution system or plumbing. Send samples to a licenced laboratory for testing. (Reg. Schedule 15)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Every 5 years	**Test for sodium and fluoride** Collect samples from the point where water enters the distribution system or plumbing. Send samples to a licenced laboratory for testing. Note: Fluoride samples can be collected and tested by a "trained person" or by a water quality analyst. (Reg. Schedule 15)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Once a year	**Prepare Annual Report**	◆ Prepare and submit annual report using the format provided by the Ministry of the Environment through DWIS. (Reg. Section 11)	◆ Send annual report to: 1. Electronically to the Ministry; 2. The interested authority for each designated facility[6]; and 3. Every person who requests a copy. ◆ Provide each designated facility served by your water works with a copy. ◆ Keep copies of the annual report for at least 5 years. (Reg. Section 13)

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[6] If the designated facility is a private school, a children's camp, or a private seniors' residence/retirement home, then you do not have to send an annual report to the interested authority.

What are my monitoring and reporting requirements?

Compliance Calendar for Periodic Monitoring & Reporting Requirements

FREQUENCY	MONITORING WATER QUALITY AND PROPER FUNCTIONING OF EQUIPMENT	PREPARING AND RECEIVING RECORDS/REPORTS	DISTRIBUTING AND RETAINING (ON-FILE) REPORTS/RECORDS
Every 5 years (surface water source) Every 10 years (groundwater source)	**Prepare an Engineering Evaluation Report and submit a written notice to the Ministry** (within 7 days after the engineering evaluation report is required to be prepared). (Reg. Schedule 21)	◆ This written notice must include a copy of an engineer's written opinion that all equipment required for treatment (schedule 2) and operational checks (schedules 6, 9) is being provided and the reasons for the opinion. (Reg. Schedule 21)	◆ Keep your Engineering Evaluation Report for at least 15 years. (Reg. Section 13)

Step 8: Determine if You Can Apply for Full Relief from Requiring Any Treatment

As recommended by Commissioner O'Connor, the Drinking-Water Systems Regulation (O. Reg. 170/03) allows certain owners to apply for an approval from the Ministry of the Environment relieving them of the requirement to provide minimum treatment. This relief is only allowed, however, if the owner is able to demonstrate that the safety of the drinking water provided by the owner's system meets acceptable risk-based standards. This process is not available to owners of drinking water systems that obtain their water from a surface water source, including groundwater systems under the influence of surface water.

Those who wish to go through this process have to make an application that provides a comprehensive range of information based on a risk analysis and management plan.

Who can apply for full relief from treatment requirements?

Owners of a non-municipal drinking water system that obtains water from a groundwater source can apply for relief from all treatment requirements (found in Schedule 2 of the Drinking-Water Systems Regulation).

How do I apply?

Drinking water system owners who wish to apply for relief must obtain the services of a professional engineer in order to make the necessary assessments required by the application. The engineer must follow the Ministry of the Environment's "Guide for Applying for Approvals Related to Municipal and Non-Municipal Drinking water Systems," and must complete the appropriate submissions.

Submissions or activities that are required to be carried out by the engineer as part of an application process include:

- a written statement that confirms that he or she has requested all information related to the drinking water system from the local health unit, has consulted with the Local Medical Officer of Health about potential health issues or concerns related to the drinking water system, and has set out in the statement any issues or concerns raised;
- a characterization of the drinking water system's raw water supply that includes a minimum of 24 CONSECUTIVE months microbiological sample history, a statement concluding that there are no significant and rapid shifts in chemical and physical characteristics that indicate surface water influence (that is, pH, turbidity, temperature, nitrate, nitrite, and conductivity), and copies of any other records that show past evidence of surface-water contamination (such as, presence of viruses, chlorophyll a, protozoan cysts, macro-organisms);
- surveys and analyses prepared by or under the supervision of the engineer that deal with the potential risks of microbiological contamination related to each of the following: well construction and well-head protection, the well-head vicinity and recharge zone, and distribution system and plumbing; and
- a proposed management plan prepared by or under the supervision of the engineer that provides guidance for operations related to preventing, reducing and managing microbiological risks[7].

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[7] A proposed management plan for preventing, reducing and managing microbiological risks should include the following components: (1) operating procedures relating to the maintenance activities at the start of an operating season and relating to routine flushing and disinfecting activities (you must also include written operating procedures relating to increased monitoring activities after adverse weather events such as heavy rainfall or floods); (2) logs relating to samples taken (include location, sample times, signatures, and test results); (3) a protocol for notification (and a contact list) that clearly describes the steps to notify the users of the system, the Ministry of the Environment, and Local Medical Officer of Health upon adverse events and the importance of keeping contact lists up to date; (4) a procedure for corrective action upon adverse events that is consistent with the Ministry procedure entitled, "Procedure For Corrective Action for Systems Not Currently Using Chlorine"; and (5) a procedure for making records, in order to summarize any corrective actions taken, the results of the corrective action, and the resolution of the issues that gave rise to the corrective actions.

Notify the Ministry using DWIS

Notification of your intent to apply for regulatory relief must be made using the approved notice - *Notification of Intent to Apply for Relief* - which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

Schedule 5 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the application for full relief from all treatment requirements.

Must I consult with the users of my system?

Ensure that the occupants of all private residences served by the system are notified of the application and given reasonable opportunity to make comments. A written summary of those comments and responses must also be prepared before the application for relief is made to the Ministry of the Environment.

What exemptions from providing treatment, testing, etc. exist under section 8?

You may be exempted from regulatory requirements according to section 8, if your drinking water system does not use electricity OR if you own a small non-municipal non-residential drinking water system that uses electricity but does not serve any designated facilities or food service establishments that rely on the system for the supply of potable water (under the Food Premises Regulation, Regulation 562). In addition, you must:

- post appropriate warning notices;
- check your warning notices once a week to make sure they are in compliance with O. Reg. 170/03;
- disconnect all drinking water fountains to render them inoperable; and
- provide written notice to the Ministry of the Environment Director, that the above steps have been taken, using the approved submission in DWIS.

What exemptions exist for non-residential systems (under section 6)?

If you own a non-residential system that is connected to and receives water from a drinking water system that is subject to O. Reg. 170/03, and that provides secondary disinfection in accordance with the Regulation, and the owner of the system providing the water has agreed in writing to ensure that (1) the secondary disinfection equipment is operated so that at all times and at all locations within your distribution system the required free or combined chlorine residual is maintained (whichever applies), and (2) to sample and test the water in the distribution system of the system that obtains the water as if it were part of the distribution system of the system providing the water, you are exempt from most of the requirements of O. Reg. 170/03. Refer to section 6 of the Regulation for more details about these requirements.

Note: A network of pipes that is located on a single property and that is connected to a regulated drinking water system is not considered to be a drinking water system to which O. Reg. 170/03 applies. To be considered as a connected drinking water system to which section 5 or 6 exemptions from regulatory requirements apply, the network of pipes that receives water from the regulated system would have to be located on more than one property.

What exemptions exist for non-residential systems receiving transported water (under section 7)?

If you own a non-residential system that receives transported water from a drinking water system that is subject to O. Reg. 170/03, and that provides secondary disinfection in accordance with the Regulation, you are exempt from most requirements of the regulation but still have to monitor chlorine residual in your system on any day in which a designated or public facility is open. Note that if your system provides disinfection equipment for primary disinfection that does not use chlorination or chloramination, you do not have to monitor chlorine residual if your disinfection equipment is properly alarmed. Refer to section 7 of the Regulation for more details about these requirements.

What adverse test results and other problems must I report?

The following adverse test results must be reported immediately to the Ministry of the Environment's Spills Action Centre and the Local Medical Officer of Health in accordance with section 18 of the *Safe Drinking Water Act* (SDWA):

- a result that exceeds any of the standards listed in Schedules 1, 2 or 3 of the Ontario Drinking-Water Quality Standards Regulation;
- a result indicating the presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci* in a sample of drinking water;
- a result indicating the presence of a pesticide not listed in Schedule 2 of the Ontario Drinking-Water Quality Standards Regulation is detected in a sample of drinking water;
- if chlorination is used, a result indicating that the concentration of free chlorine residual is less than 0.05 mg/L in a distribution sample;
- if chloramination is used, a result indicating that the concentration of combined chlorine residual is less than 0.25 mg/L in a distribution sample;
- a test result exceeding the maximum concentration for a parameter identified under an approval or order as a health-related parameter;
- if filtration is required, a result indicating the turbidity is more than 1.0 NTU in filter effluent; if grab sampling or, if continuously monitoring, more than 1.0 NTU in 2 consecutive filter effluent samples taken 15 minutes apart (report only once per 24 hours);
- a result indicating the sodium concentration exceeds 20 mg/L in a sample of drinking water (report only once per 5 years); or
- a result indicating the fluoride concentration exceeds 1.5 mg/L in a sample of drinking water (report only once per 5 years).

In addition, any observation that indicates that a drinking water system that provides (or is required to provide) disinfection is directing water that has not been properly disinfected to users, must also be reported immediately to the Ministry's Spills Action Centre and the Local Medical Officer of Health, in accordance with section 18 of the SDWA.

Note: Small non-residential systems that do not serve a designated facility do not have to comply with section 18 of the SDWA and Schedule 16 of the Drinking-Water Systems Regulation until June 1, 2005.

Who must I notify and how must I notify them of these problems?

Step 1, Make immediate report (by telephone or in person).

Immediately report the adverse result or other problem to the Ministry's Spills Action Centre (telephone 1-800-268-6060) and the Local Medical Officer of Health, by speaking with someone in person or on the telephone.

When you make a report, you must specify the adverse test result or the observation that your drinking water system has not adequately disinfected water directed to users of the system, and the action or appropriate corrective action that is being taken.

Step 9:
Notify Authorities of Adverse Test Results and Other Problems

The Drinking-Water Systems Regulation (O. Reg. 170/03) continues to require mandatory reporting of adverse test results to both the Local Medical Officer of Health and the Ministry of the Environment.

Here is how the notification of an adverse test result works:

- ☐ **The licenced laboratory identifies an adverse result.**
- ☐ **The licenced laboratory notifies the system owner, the Ministry's Spills Action Centre (SAC), and the Local Medical Officer of Health (LMOH).**
- ☐ **The owner notifies SAC and LMOH.**

Step 2, Deliver written notice.
You must deliver written notice within 24 hours of giving the immediate verbal notice using the approved notice available through DWIS. The written notice must indicate the problem and the appropriate corrective action that is being taken. Send the written notice to:

- the Local Medical Officer of Health; and
- the Ministry of the Environment's (MOE) Spills Action Centre (Submit through DWIS).

Step 3, Deliver follow-up notice of action taken.
You must deliver follow-up written notice within 7 days of resolving the issue that gave rise to the first notice using the approved notice available through DWIS. The follow-up written notice must summarize the action taken and the results achieved to the Local Medical Officer of Health, and the MOE Spills Action Centre.

Use the approved notices available in DWIS

Written notice of any adverse test results or other problems, followed by a second notice detailing the resolution of the problem, must be made using the approved notices, which are to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

- *Written Notice of Adverse Test Results and Other Problems*
- *Notice of Issue Resolution at Drinking Water Systems* (AWQI-NR)

Submit the written notice to the Spills Action Centre by going to the Ministry of the Environment's website, then accessing "DWIS". Log in by entering your user name and password and select the appropriate notice.

Within 24 hours of giving the required immediate verbal notice of any problem, drinking water system owners must also submit the notice to the Local Medical Officer of Health. .

Once the issue is resolved, complete the *Notice of Issue Resolution at Drinking- Water Systems*. Submit it to the Ministry through DWIS and submit another copy to the Local Medical Officer of Health.

Step 10: Take Corrective Action.

In the event that your system experiences an adverse test result or you observe that your system is not properly disinfecting water that is being directed to users, not only must you notify the appropriate authorities (including the Ministry of the Environment and the Local Medical Officer of Health), but you must also take corrective action to protect the users of your water. There are different types of corrective actions depending on the type of water quality problem you may find in your samples. Schedule 18 of the Drinking-Water Systems Regulation (O. Reg. 170/03) describes different corrective actions that are required following certain adverse test results or observation of certain problems.

What Corrective Actions Must I Take When Adverse Test Results are Received or Other Problems are Observed?

(Schedule 18 of O. Reg. 170/03)

Adverse test result or other problem	Water use	Treatment	Sampling and testing	Consult with ...
Water not disinfected properly has been directed to users	Take steps to notify users to use an alternate source of drinking water or to recommend that users bring water to a rapid boil for at least one minute before use.	Restore the disinfection.		Local Medical Officer of Health
If filtration is required, the turbidity in filter effluent is more than 1.0 NTU	Take steps to notify users to use an alternate source of drinking water or to recommend that users bring water to a rapid boil for at least one minute before use if problem can not be resolved quickly.	1. Check equipment, backwash or replace filters, and correct any other faulty processes. 2. If resample confirms exceedance, follow manufacturer's servicing recommendations and flush the distribution system and plumbing.		Local Medical Officer of Health
If chlorination is used, free chlorine residual is less than 0.05 mg/L in a distribution sample	Take steps to notify users to use an alternate source of drinking water or to recommend that users bring water to a rapid boil for at least one minute before use if problem can not be resolved quickly.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, on the next page).	Test to ensure that a 0.2 chlorine residual is achieved.	Local Medical Officer of Health
E. coli or fecal coliform detected from any one sample.	Take steps to notify users to use an alternate source of drinking water or to recommend that users bring water to a rapid boil for at least one minute before use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, on the next page).	Immediately resample and test (see note 2, on the next page). Continue corrective action until *E. coli* or fecal coliforms are no longer detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health

Resample test confirms total coliforms (but not fecal coliforms).	Take steps to notify users to use an alternate source of drinking water or to recommend that users bring water to a rapid boil for at least one minute before use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until total coliforms are no longer detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms more than 200 Background CFU/100mL (but not fecal coliforms) on a total coliform membrane filter.	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until less than 200 Background CFUs/100 mL are detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms more than 500 CFU/mL (but not fecal coliforms) on a heterotrophic plate count (HPC).	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until less than 500 CFUs/mL are detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci*.	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci* are not detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms exceedance of a chemical and radiological parameter listed in Schedule 2 or 3 of the *Ontario Drinking water Quality Standards Regulation* (O. Reg. 169/03)	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms that a pesticide NOT listed in Schedule 2 of the *Ontario Drinking water Quality Standards Regulation* (O. Reg. 169/03) is detected.	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms exceedance of the maximum concentration for a parameter identified under an approval or order as a health-related parameter	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms a sodium concentration that exceeds 20 mg/L and a report has not been made in the previous 5 years	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health

Note 1: If you are not currently using chlorine, take the corrective action as outlined in the Ministry's "Procedure for Corrective Action for Systems Not Currently Using Chlorine" (available on the Ministry's Web site, www.ene.gov.on.ca).

Note 2: "resample and test" (as defined in O. Reg. 170/03) for a microbiological parameter means that you must immediately collect and transport a set of at least 3 drinking water samples for the parameter, which caused the adverse water quality to your licenced laboratory for analysis. The first sample must be from the same location as the sample that gave rise to the corrective action. The second sample must be from a location that is a significant distance upstream from the location of the adverse result, where reasonably possible, and the third sample must be from a location that is a significant distance downstream from the adverse result, where reasonably possible.

To "resample and test" for a parameter that is not a microbiological parameter means that you must collect and transport a water sample for the parameter which caused the adverse water quality from the same location as the sample that gave rise to the corrective action to your licenced laboratory for analysis.

Step 11:
Post Warning Notices of Potential Problems

Owners are required to post a warning notice if you are not currently complying with the microbiological testing regime required by the Drinking-Water Systems Regulation (O. Reg. 170/03) or if you did not carry out the necessary corrective actions for some reason. These warning notices have to be posted in prominent locations to alert users of the system.

For copies of warning notices, contact the Public Information Centre at 1-800-565-4923 or (416) 325-4000.

Warning notices do NOT exempt you from the regulation!
The warning notices referred to on this page are a temporary and additional requirement to protect public health. They do not relieve the drinking water system owner of any regulatory requirements. The owner must still comply with the requirements as soon as possible despite posting a warning notice.

Schedule 19 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the posting of warning notices.

When is it necessary to post a warning notice?

Under Schedule 19 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must post a warning notice:

- if you are not presently in compliance with microbiological sampling and testing requirements of Schedule 12;
- if you did not carry out the appropriate corrective action required under Schedule 18; and/or
- if you must, as a corrective action, notify all users to use an alternate source of water or to boil the water for at least one minute before using.

Warning Notices do NOT provide a regulatory exemption! The warning notices required to be posted in accordance with Schedule 19 are a temporary and additional requirement meant to protect public health, the fundamental objective of this regulation. They do not relieve the owner of any regulatory requirements. The owner must still comply with the requirements of Schedule 11, 12 or 18 as soon as possible despite posting a warning notice.

Where do I post the warning notice?

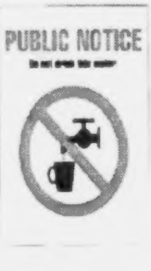
Post the notice in a prominent location where it is likely to be seen by those using water from the system. If you fail to post a warning notice at your drinking water system, a provincial officer or public health inspector may do so instead.

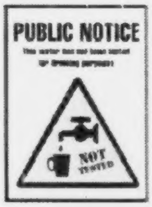
What must the warning notice say and where can I obtain them?

Warning notices must be in a form provided by or approved by the Director. There are two warning notices available from the Ministry of the Environment for the purposes of posting warning notices of potential problems. The proper notice must be used according to the specific situation described above. You may also wish to indicate where an alternate source of drinking water can be obtained, if applicable.

Use the approved notice(s).

You must post warning notices upon receiving notification of the following adverse test results or adverse conditions: improper disinfection (18-2), turbidity (18-3), chlorine residual (18-4), *Escherichia coli* (18-5), AND if corrective action has not been taken. For copies of "Warning Notice of Non-Compliance of O. Reg. 170/03", contact the Ministry of the Environment's Public Information Centre at 1-800-565-4923 or (416) 325-4000.





Step 12:
Make Information Available to the Public

Under section 12 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must make certain reports and documents available on site at each drinking water system, so that interested persons may read them on request, free of charge, during normal business hours.

Section 12 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the information that must be made available.

What reports and documents must I make available to the public?

- Every test result (not older than two years) required by O. Reg. 170/03, or O. Reg. 459/00 or under an approval or order;
- Every approval and order issued (not older than two years) that applies to your drinking water system and that is still in effect, if it was issued after January 1, 2001;
- Every annual report prepared under Section 11 of O. Reg. 170/03, or under O. Reg. 459/00, or under O. Reg. 505/01 for the past two years;
- A copy of the Drinking-Water Systems Regulation (O. Reg. 170/03); and
- A copy of every Engineering Evaluation Report for the past two years.

How do I prepare my Annual Report?

To make the preparation of this report as easy as possible, the Ministry of the Environment has designed an Annual Report template which MUST be used and is available on the Ministry's website through DWIS. The following is a summary of the type of information you will need to complete the Ministry's Annual Report template:

- information on your drinking water system (i.e., name and address of the drinking water system and the name and address of the owner of the drinking water system, the category of the drinking water system, the name of the local Public Health Unit, the population being served, public facilities served, the pumping capacity and a list of the water treatment chemicals used by the system during the period covered by the report);
- information on your drinking water source (groundwater, surface water or groundwater under the direct influence of surface water);
- information on the number of adverse test results during the reporting period for microbiological, chemical, chlorine residual and turbidity;
- summary of microbiological and chemical results;
- information on parameters not required during the reporting period;
- information on additional testing and sampling carried out in accordance with the requirement of an approval or an order;
- description of the corrective actions undertaken under Schedule 18;
- information on major expenses incurred during the period covered by the Annual Report (such as the cost of treatment equipment, instrumentation for measuring chlorine levels, etc.); and
- information on how the Annual Report was shared with drinking water users (for example, a copy of the Annual Report was given to every person who requested it).

Use the approved format available in DWIS.

- Submitting the Annual Report.

You must use the Ministry's Annual Report Template, which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

When is the first Annual Report due?

- If a small non-residential system was required to submit an annual report under O. Reg. 505/01, the first report was due May 31, 2004, and should have covered the period from August 1, 2002 to March 31, 2004.
- If a small non-residential system not subject to O. Reg. 505/01, then the first report is due May 31, 2006 and shall cover the period from June 1, 2005 to March 31, 2006.

Note: if your drinking water system is connected to and receives all of its drinking water from another drinking water system, the owner of the drinking water system from which the water is obtained must ensure that the owner of the connected drinking water system is given a copy of the Annual Report.

Step 13:
Prepare and Submit an Annual Report

In order that the public has access to information on the status of drinking water, an Annual Report on the operation of your drinking water system must be prepared using a prescribed format, made available to the public and submitted to the Ministry of the Environment.

The Annual Report must cover the period from April 1st of the previous year through to March 31st of the current year, and the report must be submitted by May 31st of each year.

The annual report is to be submitted electronically through DWIS.

Section 11 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Annuals Reports.

Step 14:
Retain Required Reports and Documents

Under section 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03), drinking water system owners and laboratories must keep copies of certain reports and documents on file.

If the Ministry of the Environment Director or provincial officer requests your records, you must send them within the period requested.

Section 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers record keeping.

What records must I retain? And for how long?

As a drinking water system owner, you must keep copies of the following records for at least five years:

- Every record or report of test results for microbiological parameters and operational checks, as required under section 7, Schedules 6-12 or sections 18-5 to 18-9 of Schedule 18 of O. Reg. 170/03.
- Every annual report prepared under Section 11 of O. Reg. 170/03.
- Every record or report related to a test result under an approval or order, unless the record or report relates to an organic or inorganic parameter listed in Schedule 23 or 24 of O. Reg. 170/03 or a parameter listed in Schedule 3 of the Ontario Drinking water Quality Standards Regulation (O. Reg. 169/03).
- Every record or report of test results for microbiological parameters prepared under section 7, and clause 9(b) of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003, or tests prepared under section 7, 8 and 12 of O. Reg. 505/01 before the Regulation was revoked on June 1, 2003.
- Every annual report prepared under section 12 of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003, or reports prepared under section 15 of O. Reg. 505/01 before the Regulation was revoked on June 1, 2003.

As a drinking water system owner, you must keep copies of the following records for at least 15 years:

- Every record or report of test results for chemical parameters as required by Schedule 15 (Small Non-Residential Systems) and sections 18-10 to 18-13 of Schedule 18 of the Drinking-Water Systems Regulation.
- Every record or report related to a test result under an approval or order if the record or report relates to an organic or inorganic parameter listed in Schedule 23 or 24 of O. Reg. 170/03 or a parameter listed in Schedule 3 of the Ontario Drinking water Quality Standards Regulation (Reg. 169/03).
- Every Engineering Evaluation Report prepared under Schedule 21 of O. Reg. 170/03.
- Every record or report of test results for chemical parameters prepared under section 7 and clause 9(a) of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003, or tests prepared under section 9 of O. Reg. 505/01 before the Regulation was revoked on June 1, 2003.
- Every report relating to the drinking water system's raw water supply prepared under paragraph 7 of subsection 2(2) (written report concluding that the system's raw water is groundwater under the direct influence of surface water) or subsection 2(3)(a) (written report prepared after August 1, 2000, concluding that the raw water supply is not groundwater under the direct influence of surface water).
- If the owner gave the Director a written statement by a professional engineer under subsection 21-2 (3) of Schedule 21, a copy of the OWRA approval referred to in that section.

This is the second guide in a four-guide resource package.
The Ontario Ministry of the Environment has prepared a series of guides for the four categories of regulated, non-municipal drinking water systems. If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, download an electronic version from the Ministry's website at www.ene.gov.on.ca or call our Public Information Centre at 1-800-565-4923. See the back page of this guide for other sources of information.

Guide 1, Does the Regulation Apply to Me?

Guides 2A-2D, A Guide for Regulated, Non-Municipal Drinking Water Systems
- Guide 2A, Non-Municipal Seasonal Residential Systems
- Guide 2B, Non-Municipal Year-Round Residential Systems
- Guide 2C, Small Non-Municipal Non-Residential Systems
- Guide 2D, Large Non-Municipal Non-Residential Systems

Guide 3, How to Collect Drinking Water Samples

Guide 4, Glossary of Terms

Note: reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03), the *Safe Drinking Water Act*, 2002, and the other related regulations and procedures to ascertain an owner/operator's specific legal requirements. See back cover for details.

Obtain the Specific Information You Need to Meet Your Regulatory Responsibilities.

The Resource Package for Regulated Non-Municipal Drinking water Systems contains a number of components that, together, are designed as a support tool to help owners and operators of regulated systems deliver safe, clean drinking water. Titles in this resource package will help you:

☐ determine whether the system you own or operate is regulated under O. Reg. 170/03;
☐ provide more detailed information for each of the four categories of regulated, non-municipal drinking water systems;
☐ show you how to collect samples and have them analyzed; and
☐ provide definitions of key technical and water management terms.

If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, or download an electronic version from the Ministry's website at www.ene.gov.on.ca

How do I obtain the documents and contact information I need?

How can I obtain a copy of the Drinking-Water Systems Regulation and additional information on my regulatory responsibilities?	Visit the Ministry website at www.ene.gov.on.ca, click on "Water" then scroll down the page and click on "Drinking-Water Systems Regulation – Information Page" (http://www.ene.gov.on.ca/envision/water/sdwa/dwsr.htm). This will take you to a full page of links to key documents, technical updates, laboratory licencing information, legislation and regulations, forms, general information and related documents. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
How do I find a licenced laboratory for analyzing my drinking water samples?	Check the Ministry website for a list of laboratories licenced to perform drinking water testing under the *Safe Drinking Water Act*, available at: http://www.ene.gov.on.ca/envision/water/sdwa/licencedlabs.htm. You can also call the Ministry of the Environment Laboratory Licencing Administrator at 416-235-6370.
How do I contact the Local Medical Officer of Health or the Public Health Unit for my community?	Check the "Blue Pages", under the heading "Health", in your local telephone directory for the listing of your public health unit. You can also visit the website of the Ministry of Health and Long-Term Care (MOHLTC) at www.health.gov.on.ca, or call the MOHLTC info-line at 1-800-268-1154, or 416-314-5518 in Toronto.
Where can I find the nearest local or regional office of the Ministry of the Environment?	Check the "Blue Pages", under the heading "Environment", in your local telephone directory. You can also visit the Ministry website at www.ene.gov.on.ca and look under the heading "About the Ministry" on the home page. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
Where can I find more information on training and certification of system operators?	Contact the Ontario Environmental Training Consortium (OETC) through its website at www.oetc.on.ca, or by telephone at 905-796-2851. For more information, the new Certification of Drinking water System Operators and Water Quality Analysts Regulation (O. Reg. 128/04) is available at: http://www.e-laws.gov.on.ca/DBLaws/Regs/English/040128_e.htm.

The Ontario Drinking-Water Systems Regulation
(O.Reg. 170/03)

Guide 2D:
What are my responsibilities under O.Reg. 170/03?

A Guide for Owners and Operators of
Large Non-Municipal Non-Residential Drinking Water Systems

Ontario Ministry of the Environment
December 2004

Protecting our environment. Ontario

This publication is provided for information purposes only.

This guide is the second guide of a four-guide kit designed to assist owners and operators of regulated non-municipal drinking water systems more fully understand their responsibilities in delivering safe, clean drinking water. However, readers are advised against using this document for compliance purposes. Reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03) and the *Safe Drinking Water Act, 2002* to ascertain an owner/operator's specific legal requirements and to determine whether or not a system is in compliance. The Act and its regulations may be obtained from Ontario's e-laws website at www.e-laws.gov.on.ca.

This Guide is for you if you are an owner or operator of a drinking water system that:

- does not serve either a major residential development (6 or more private residences), or a trailer park or campground that has more than five service connections (hook-ups) and
- is capable of supplying drinking water at a rate greater than 2.9 litres per second (equivalent to 250,000 litres/day).

This guide is NOT for use by:

- designated facilities including children's camps, health care facilities, a delivery agent care facility, a school or private school, a social care facility, a university, college or institution with authority to grant degrees.

This Guide is designed to be user-friendly.

The right-hand, shaded column summarizes the contents of each section and highlights the basic requirements under the regulation. **You should read this first.** The left-hand side of the page contains the regulatory details needed to meet your regulatory responsibilities, as well as a reference to the appropriate section on the regulations. It is recommended that you refer to the text of the regulation itself for full compliance instructions.

Sources of additional information, including the other guides in this resource package, are also provided.

Remember, this guide is only a summary tool.
To be clear about your specific legal requirements, you must refer to the text of the Drinking-Water Systems Regulation (O.Reg.170/03) and the *Safe Drinking Water Act, 2002.* You can access these at www.ene.gov.on.ca under the section on Water, or by calling our Public Information Centre at 1-800-565-4923.

How Does The Kit Work?

This Kit for Regulated Non-Municipal Drinking Water Systems contains a number of Guides that, together, are designed to help owners and operators of regulated systems deliver safe, clean drinking water.

The Kit is made up of 4 Guides:

Guide 1: Does the Regulation apply to me?

Guide 2: What are my responsibilities under O. Reg 170/03?

(There are 4 versions of Guide 2, one for each of the non-municipal drinking water categories as defined in O. Reg 170/03. Refer to Guide 1 to determine which category your system falls into and whether you should use Guide 2a, 2b, 2c or 2d.)

Guide 3: How to Collect Drinking Water Samples

Guide 4: Glossary of Terms

Checklist for owners and operators of regulated large non-municipal non-residential drinking water systems

Step 1: Register Your Drinking Water System.

☐ Where do I register my drinking water system?
☐ What must I complete and submit to register my system?

Step 2: Select a Licenced Laboratory to Analyze Your Drinking Water Samples.

☐ How do I choose a laboratory for testing my drinking water samples?
☐ How can I find out if a laboratory is licenced for specific testing?

Step 3: Know and Meet Your Sampling and Testing Requirements.

☐ What procedures must I follow when samples are collected?
☐ What are my microbiological sampling and testing requirements?
☐ What are my chemical sampling and testing requirements?
☐ Also refer to Step 7 to learn the Operational Checks required

Step 4: Provide A "Minimum Level of Treatment."

☐ What are the minimum treatment requirements?
☐ What are the requirements for Groundwater Supplies?
  - Primary Disinfection

☐ What are the requirements for Surface Water (or a GUDI Source) Supplies?
  - Filtration and Primary Disinfection
  - Secondary Disinfection

☐ Can I use point of entry treatment units?
☐ What are the deadlines for providing treatment equipment?
☐ Do I need to submit written notice of my intentions?

Step 5: Have an Engineering Evaluation Report Completed and Submit Written Notice to the Ministry of the Environment.

☐ What must my Engineering Evaluation Report cover and who must complete it?
☐ When is my Engineering Evaluation Report Due?
☐ When must I submit a written notice to the Ministry?
☐ When must I submit subsequent Engineering Evaluation Reports?
☐ What exemptions are available?

Step 6: Have A 'Certified Operator' Adjust Equipment and Conduct Operational Checks.

☐ Who can operate my drinking water system and conduct operational tests?
☐ Do I need a certified operator to conduct operational water tests?
☐ How can I access more information on the certification and training requirements for an operator and water quality analyst?

Let's Get Started.

As an owner/operator of a regulated large non-municipal non-residential drinking water system[1], you have an obligation to familiarize yourself with your duties under Ontario's Drinking-Water Systems Regulation (O. Reg. 170/03) and the other associated regulations and procedures that govern drinking water systems. This guide explains each of the regulatory requirements that apply to you, including:

- Registering your drinking water system
- Selecting a licenced laboratory
- Meeting sampling and testing requirements
- Installing treatment equipment to meet a minimum level of treatment
- Preparing Engineering Evaluation Reports and written notices
- Using certified operators
- Conducting operational checks
- Notifying authorities of adverse test results and other problems
- Taking corrective action
- Posting warning notices
- Making required information available
- Submitting an annual report

Continued...

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[1] According to section 1 of the Drinking Water Systems Regulation (O. Reg. 170/03), a "large non-municipal non-residential system" means a non-municipal drinking water system that is capable of supplying drinking water at a rate of more than 2.9 litres per second and does not serve (a) a major residential development, or (b) a trailer park or campground that has more than five service connections.

Step 7: Undertake Operational Checks.

☐ What operational checks must I undertake?
☐ How do I test for turbidity?
☐ How do I test for residual chlorine?
☐ What exception exists for large non-residential systems?
☐ What are my monitoring and reporting requirements?

Step 8: Determine if You Can Apply for Full Relief from Requiring Any Treatment.

☐ Who can apply for full relief from treatment requirements?
☐ How do I apply?
☐ Must I consult with the users of my system?
☐ What exemptions exist for non-residential systems (under Section 6)?
☐ What exemptions exist for non-residential systems receiving transported water (under Section 7)?

Step 9: Notify Authorities of Adverse Test Results and Other Problems.

☐ What adverse test results and other problems must I report?
☐ Who must I notify and how must I notify them of these problems?

Step 10: Take Corrective Action.

☐ What corrective actions must I take when adverse test results are received or other problems are observed?

Step 11: Post Warning Notices of Potential Problems.

☐ When is it necessary to post a warning notice?
☐ Where do I post the warning notice?
☐ What must the warning notice say and where can I obtain them?

Step 12: Make Information Available to the Public.

☐ What reports and documents must I make available to the public?

Step 13: Prepare and Submit an Annual Report.

☐ How do I prepare my Annual Report?
☐ When is the first Annual Report due?

Step 14: Retain Required Reports and Documents.

☐ What records must I retain? And for how long?

- Retaining required records

The guide also clarifies an option that exists in the regulation that can allow you to apply for full relief from treatment requirements. Step 8 will help you determine if you can apply for such relief.

Where do I register my drinking water system?

You must categorize your drinking water system under the Drinking-Water Systems Regulation (O. Reg. 170/03), and register it on the Ministry of the Environment's Drinking Water Information System (DWIS). Registration on this system also gives you the access you will need to make submissions to the Ministry as specified by the provisions of O. Reg. 170/03.

The Drinking Water Information System (DWIS) gathers, in one place, information about municipal and non-municipal drinking water systems across the province. This information will help the province, municipalities, non-municipal systems and licenced laboratories meet our shared commitment to safe, clean drinking water for the people of Ontario.

Once you have finished registration, you will be able to log into DWIS at www.ene.gov.on.ca/environet/DWIS/index.htm.

What must I complete and submit to register my system?

To register, the Drinking Water System owner has to make a submission that includes the completion of:

- A *Drinking Water System Categorization* questionnaire,
- A *Drinking Water System Profile* questionnaire, and
- A *Laboratory Services Notification Form*.

To access the Drinking Water Information System Registration, go to www.ene.gov.on.ca/environet/DWIS/index.htm. Follow the onscreen instructions as you complete the submissions.

The Ministry of the Environment requires electronic submission of information. However, you may be authorized to make paper submissions under special circumstances (e.g. if you do not have internet access). For more information, refer to Guide 1 under 'Registration.'
To speak with someone at the registration desk, call 1-866-793-2588.

Step 1:
Register your drinking water system

You must register your drinking water system on the Ministry of the Environment's Drinking Water Information System (DWIS). You must complete the *Drinking Water System Categorization*, and *Drinking Water System Profile* questionnaires along with a *Laboratory Services Notification Form*. You can do this one of three ways:

1. To register online, go to the Ministry's homepage at www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System. Follow the on-screen instructions.
2. To access DWIS and obtain more information, you can also visit your local Government Information Centre. To find a Centre near you, call 1-800-267-8097 toll-free.
3. You may be authorized to make paper submissions under special circumstances (i.e. if you do not have internet access).

Refer to Guide 1 for more details on registration.

How do I choose a licenced laboratory for testing my water samples?

When you send your water samples to a laboratory for analysis, there are a number of conditions you and the laboratory must meet. It is up to you to ensure each of the following:

- The laboratory must be licenced by the Ministry to test for the specific parameter(s) you need analyzed. A licenced laboratory must use accredited testing methods for each parameter it tests. Licenced laboratories are required to meet strict conditions in order to be licenced for the testing of specific parameters by the Ministry. Each laboratory is inspected by the Ministry's Specialized Laboratory Inspectors at least twice a year.
- Laboratories may accept your samples but then may need to sub-contract them to an appropriately licenced laboratory. They must have your written permission to do so.
- As of October 1, 2003, if the laboratory performing the analysis is located outside Ontario, then ensure they are on a list of eligible out-of-province laboratories (check with the Ministry of Environment through the Ministry's website at: http://www.ene.gov.on.ca/envision/water/sdwa/licencedlabs.htm or by contacting the Ministry's Service Desk at 1-866-494-6663)
- You must submit a written notice to the Ministry of the Environment identifying the licenced laboratory(ies) that will be carrying out the testing before you send your samples to the laboratory(ies) for the first time. Once you have submitted the *Laboratory Services Notification Form*, you do not have to submit it again unless you change a laboratory or you change the testing services provided by a laboratory. Laboratories will assist you with completing this submission to ensure that the correct information is submitted.
  Note: It is strongly recommended that owners include a back-up laboratory on their Laboratory Services Notification Form in case the primary laboratory encounters unforeseen equipment/testing problems.
- It is the responsibility of the licenced laboratory to ensure that they send a written report to you or the operator of the drinking water system and an electronic report to the Ministry of the Environment of all required test results within 28 days of your drinking water samples being analyzed and the data being approved.

How can I find out if a laboratory is licenced for specific testing?

1. View the list of licenced laboratories on the Ministry's web site: http://www.ene.gov.on.ca/envision/water/sdwa/licencedlabs.htm or
2. Contact the Public Information Centre at 1-800-565-4923 or (416) 325-4000, or
3. Contact a laboratory directly and ask them what they are licenced to test for.

Notify the Ministry about the Licenced Laboratories you have selected using DWIS.

You must notify the Ministry of the Environment when you have selected the laboratories that will carry out the analyses of your water samples. Notice must be made using the approved submission - *Laboratory Services Notification Form* - that is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

Step 2:
Select A Licenced Laboratory to Analyze Your Drinking Water Samples

When you send the drinking water samples that are required by the Drinking-Water Systems Regulation to a laboratory for testing, the testing must be carried out by a laboratory that is licenced by the Ministry of the Environment for each specific parameter being tested. While some laboratories may be licenced to test for all the microbiological and chemical parameters required by the Regulation, others may be licenced to test only microbiological parameters and/or only some chemical parameters.

What procedures must I follow when samples are collected?

- Whenever a sample is collected, the person taking the sample must record the date and time the sample was taken, the location where the sample was taken and the sampler's name on the *Laboratory Chain-of-Custody Form.* (This form can be obtained directly from the Drinking Water Information System or you can obtain a Ministry-inspected Chain-of-Custody form from the laboratory conducting the tests. The laboratory's form will be customized for the drinking water system and sent to the sampler with the sampling containers.) In addition, a licenced laboratory will record the date and time the sample was tested, the results of the tests and the name of the person who conducted the tests.
- You must discuss and make contractual agreements with the licenced laboratories that perform the analytical tests for microbiological and chemical parameters. How often the samples have to be collected, and from where, depends on the type of test being performed. Laboratories must provide you with instructions on proper techniques for sample collection, transport storage and preservation, and will supply the appropriate containers.
- You must ensure that samples for microbiological testing are kept between 4 - 10°C until they are delivered to the laboratory. Do not freeze samples.

What are my microbiological sampling and testing requirements?

How often to collect samples (at a minimum)
- Raw water samples: once a month
- Distribution samples: twice a week if not chlorinating[2] or chloraminating, or once every week if chlorinating or chloraminating

Specific parameters for testing
- *E. coli* or fecal coliforms
- Total coliforms
- HPC (only in distribution samples)

Where to collect samples
- Raw water samples: raw water source (i.e. lake, river, etc.) and if using groundwater, then from each well.
- Distribution samples: from the distribution system or plumbing

Who performs analysis for parameters
- A laboratory licenced to test the parameter

By what date first samples must be taken
- June 1, 2003
- Within one week of commencing operation of new system where chlorine is not used.
- Within two weeks of commencing operation of new system where chlorine is used.

Step 3:
Know and Meet Your Sampling and Testing Requirements

Previous drinking water regulations provided for tough monitoring standards and these are continued in the Drinking-Water Systems Regulation (O. Reg. 170/03). The sampling and testing requirements – for bacteria, including *E. coli*, and chemicals, such as PCBs and pesticides – have been designed to reflect the size and population served and the needs of each of the categories of drinking water systems

The collection and transport of drinking water samples could affect the accuracy of your test results!
See Guide 3 of this Resource Package for step-by-step instructions on how to properly collect drinking water samples.

Schedule 11 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Microbiological Sampling and Testing Requirements.

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[2] If, for a period of 24 consecutive months, the presence of *E. coli*, fecal coliforms, or total coliforms are confirmed in drinking water samples on no more than one occasion (as described in Schedule 1 of the Drinking-Water Quality Standards Regulation O. Reg. 169/03), then the sampling frequency may be reduced to: once every week if not chlorinating or not chloraminating, or once every two weeks if chlorinating or chloraminating. However, if, on any two or more occasions drinking water samples confirm the presence of *E. coli*, fecal coliforms, or total coliforms in a 24-month

Continued...

Note: If your drinking water system is not in operation for seven days or more, or if for such a period the system supplies water only to the private residences that are occupied by the owner of the system, members of the owner's family, employees or agents of the owner of the system or their families, you are not required to perform microbiological sampling and testing during that period. However, upon restarting your system you must sample and receive the results prior to supplying drinking water to users of the system.

What are my chemical sampling and testing requirements?

How often to collect samples (at a minimum)
It varies depending on the parameter (See Schedule 13)

- All organic and inorganic parameters listed in Schedules 23 and 24 of the O. Reg. 170/03[3]: once every 36 months (if raw water supply is from groundwater), or once every 12 months (if raw water supply is from surface water)
- Nitrate and nitrite: once every 3 months
- Trihalomethanes (THMs) (only those systems that chlorinate or chloraminate): once every 3 months
- Sodium and Fluoride: every 60 months
- Lead: every 12 months

Where to collect samples
Point where water enters the distribution system or plumbing, except for:

- Trihalomethanes: the sample must be taken from a point in the distribution system that is likely to have an elevated potential for the formation of THMs
- Lead: the sample must be taken from a remote point in the distribution system that is likely to have an elevated concentration of lead

Who performs analysis for parameters
A laboratory licenced to test the parameter

By what date first samples must be taken

- If testing was previously done under Regulations 459/00 or 505/01 or under an OWRA approval or order, within the period of time set by the Regulation after the date of the last sample;
- For new systems that have not done chemical testing described in the previous bullet, within the period of time set by the Regulation or 12 months, whichever is shorter.

Note: If your drinking water system is not operating for 60 or more consecutive days, or if for such a period the system supplies water only to the private residences that are occupied by the owner of the system, members of the owner's family, employees or agents of the owner of the system or their families, you are not required to perform sampling and testing for nitrate and nitrite during that period.

Schedule 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Chemical Sampling and Testing Requirements.

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period (see Schedule 1 of the Drinking-Water Quality Standards Regulation O. Reg. 169/03), then you must immediately return to the original sampling frequency. A written notice of the intention to reduce testing frequencies must also have been given to the Director at least 7 days before the reductions come into effect (refer to the Ministry's Web site at www.ene.gov.on.ca for the approved notice.

[3] If, any chemical test result exceeds half of the Maximum Concentration for the parameter listed in Schedule 2 of the Ontario Drinking-Water Quality Standards Regulation (O. Reg. 169/03), you must increase the frequency of the sampling for that parameter to once every 3 months. If subsequent levels are below half the maximum concentration for 4 consecutive quarters (surface water) or 2 consecutive quarters (groundwater), you may then revert back to the original frequency.

What are the minimum treatment requirements?

As a drinking water system owner, you must treat your water by the date specified in the Schedule 2 of the Drinking-Water Systems Regulation (O. Reg. 170/03) for your system's category, unless you APPLY FOR RELIEF (refer to the section on relief in this guide).

What are the requirements for Groundwater Supplies?

- **Primary Disinfection**

You must ensure that you provide water treatment equipment that is capable of achieving, at all times, at least 99 percent removal or inactivation of viruses in accordance with the Ministry of the Environment's "Procedure for Disinfection of Drinking Water in Ontario."

What are the requirements of Surface Water (or a GUDI[4] Source) Supplies?

- **Filtration and Primary Disinfection**

You must ensure that you provide water treatment equipment that is capable of achieving, at all times, removal or inactivation of :

- 99 per cent of *Cryptosporidium* oocysts,
- 99.9 per cent of *Giardia* cysts, and
- 99.99 per cent of viruses.

in accordance with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario"

If you are using UV or other non-chlorine-based primary disinfection equipment, you must ensure that the equipment has a feature that causes an alarm to sound in the building where the disinfection equipment is located, at a location where a person is present (if a person is not always present at the building where the disinfection equipment is located), when:

- equipment malfunctions;
- equipment loses power; or
- the disinfection equipment is not providing the appropriate level of disinfection.

If an alarm sounds, a "certified operator" must be dispatched to take appropriate action and must arrive at the building where the disinfection equipment is located as soon as possible.

- **Secondary Disinfection**

Water treatment equipment must be capable of:

- secondary disinfection using chlorination or chloramination in accordance with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario"; and
- achieving at all locations within the distribution system a free chlorine residual of 0.2 mg/L (if chlorinating), or a combined chlorine residual of 1.0 mg/L (if chloraminating).

Step 4:
Provide a "Minimum Level of Treatment"

You have the flexibility to select any treatment technology that meets the performance-based criteria established in Schedule 2 of the Drinking-Water Systems Regulation (O. Reg. 170/03).
To meet the Regulation's mandatory treatment requirements, you must, at the very least, ensure that:

- wells are constructed and maintained to prevent surface water and other foreign materials from entering them;
- appropriate water treatment equipment is provided;
- water treatment equipment is operating whenever water is being supplied;
- water treatment equipment is operated as outlined in the Ministry's "Procedure for Disinfection of Drinking Water in Ontario";
- water treatment equipment is operated such that it achieves the design capabilities it is required to have;
- water treatment equipment is properly maintained;
- written operating instructions for the water treatment are kept near the equipment;
- adequate supplies of chemicals (or other materials necessary for operating the water treatment equipment) are: (a) clearly marked; (b) kept nearby the equipment; (c) separated from other chemicals and materials that are not used for the water treatment or distribution system
- replacement parts (for those parts that need to be replaced periodically) are kept nearby; and
- treatment equipment is operated by a 'certified operator.'

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[4] A groundwater source under the direct influence of surface water, as defined in O. Reg. 170/03. Refer to Guide 1 (Does the Regulation Apply to Me?) for more information.

Can I use point of entry treatment units?

Point of entry treatment units can be used for the purpose of meeting the treatment requirements of the Regulation. If you are considering using a point of entry approach to provide disinfection for your drinking water system, please refer to the specific requirements in the Regulation related to using point of entry units. Systems that use point of entry units in accordance with the Regulation do not have to provide secondary disinfection.

Schedules 2 and 3 of the Drinking-Water Systems Regulation (O. Reg. 170/03) cover minimum levels of treatment for drinking water systems and point of entry treatment.

What are the deadlines for providing treatment equipment?

If your drinking water system was operating before O. Reg. 170/03 came into effect on June 1, 2003, the deadline for providing treatment equipment is:

- July 1, 2006, if your drinking water system obtains water from a surface water source or from a groundwater source.
- New systems must meet the treatment requirements immediately upon the commencement of operations.

Note, the compliance dates specified in an existing approval under the *Ontario Water Resources Act* or orders in relation to a requirement to install treatment equipment take precedence over the compliance dates in the Regulation.

Do I need to submit written notice of my intentions?

If you have already notified the Ministry of the Environment of the completion of the Engineering Evaluation Report or submitted an application for relief from the requirements for provision of treatment equipment by December 31, 2005, then you do not need to submit this notice.

Otherwise, you must submit a written notice to the Ministry of the Environment Director on the approved submission by December 31, 2005, that includes one of the following declarations:

1. You intend to comply with the requirements for treatment equipment by the specified deadline (submit using DWIS), OR
2. You intend to make an application for relief from some or all of the requirements for provision of treatment equipment (submit using DWIS).

Notify the Ministry using DWIS.

Written notice of your intent to comply with the treatment requirements or of your intent to apply for relief must be made using the approved notice -- *Notification of Intent to Comply with Treatment Requirements* -- which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

Step 5:
Have an Engineering Evaluation Report Completed and Submit Written Notice to the Ministry of the Environment

As the owner/operator of a regulated large non-municipal non-residential drinking water system, you must ensure that a professional engineer certifies that the system is in compliance with the regulatory requirements.

The engineer must prepare an Engineering Evaluation Report for you. In turn, you must submit a notice, using DWIS, to the Ministry of the Environment within 7 days of the completion of the report. This certification has to be renewed every five years for surface water systems and every 10 years for groundwater systems.

These requirements replace the need to obtain a certificate of approval as was the case under the *Ontario Water Resources Act*

The required *Engineering Evaluation Report Notice* is available through DWIS. Access it from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

What must my Engineering Evaluation Report cover and who must complete it?

The Report must certify that a professional engineer[5] has visited your drinking water system and include the engineer's opinion that all equipment needed to comply with the treatment requirements (in accordance with Schedule 2 of O. Reg. 170/03) is being provided, as well as all the equipment needed to comply with the operational checks provisions (in Schedules 6 and 8). As a minimum, in order to comply with Schedule 21 of the Regulation, a Report must:

1. specify the category of drinking water system under O. Reg. 170/03;
2. include the opinion of the engineer that all equipment has been provided in compliance with Schedules 2, 6, and 8;
3. set out the engineer's reasons for the opinion, along with the technical and other information he or she relied on in reaching that opinion; and
4. include a maintenance schedule that sets out requirements relating to the frequency at which the equipment must be inspected, tested and replaced.

You must ensure that the professional engineer that prepares the Engineering Evaluation Report has experience in sanitary engineering.

When is my Engineering Evaluation Report due?

If your drinking water system began operating on or after June 1, 2003, you must ensure that a professional engineer submits to you an Engineering Evaluation Report within 30 days of your new drinking water system beginning operation.

If your drinking water system began operating before June 1, 2003, you must ensure that a professional engineer submits to you an Engineering Evaluation Report:

- no later than July 31, 2006 for both surface water systems and ground water systems.

Do not submit the Engineering Evaluation Report to the Ministry, but keep it on file to be made available upon request.

When must I submit a written notice to the Ministry?

Within seven (7) days after the date the Engineering Evaluation Report is required to be prepared, you must submit a written notice to the Ministry of the Environment Director using an approved notice in DWIS regarding the engineering evaluation report and include a copy of the engineer's opinion regarding your drinking water system's compliance.

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[5] According to section 1 of the Drinking-Water Systems Regulation (O. Reg. 170/03), "professional engineer" means a professional engineer as defined in the *Professional Engineers Act*

Notify the Ministry using DWIS

Written Notice must be made using the approved submission which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

- *Notice of Completion of an Engineering Evaluation Report for Existing System*
- *Notice of Completion of an Engineering Evaluation Report for New or Altered Systems*
- *Declaration of Professional Engineer to be Included Within an Engineering Evaluation Report*

When must I submit subsequent Engineering Evaluation Reports?

As a drinking water system owner, you must also ensure that a professional engineer prepares and submits to you Engineering Evaluation Reports not later than:

- five (5) years from the date your last Engineering Evaluation Report was prepared or required to be prepared (the earlier of the two) if your drinking water system obtains water from a surface water source.
- ten (10) years from the date your last Engineering Evaluation Report was prepared or required to be prepared (the earlier of the two) if your drinking water system obtains water from a groundwater source.
- If you alter[6] your drinking water system ("alteration", as defined in the *Safe Drinking Water Act*, does not include repairs), then you must ensure that a professional engineer submits to you an Engineering Evaluation Report within 30 days of commencing operation of the altered system.

Notices are also required to be submitted to the Ministry at these times.

Schedule 21 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the preparation of Engineering Evaluation Reports and the submission of the required notices to the Ministry.

What exemptions are available?

- If you have already prepared and submitted to the Ministry of the Environment (MOE) Director an Engineering Evaluation Report under Regulation 505/01, you are exempt from preparing your first Engineering Evaluation Report and submitting a written notice to the MOE Director.
- If you have been granted an approval after August 1, 2000, under section 52 of the *Ontario Water Resources Act* (Certificate of Approval), you are exempt from preparing your first Engineering Evaluation Report and submitting a written notice to the MOE Director.
- However, if you have been granted an approval under *Ontario Water Resources Act* after August 1, 2000, you must have an engineer prepare a statement certifying that she or he has visited the system and that equipment required by Schedules 2, 6 and 8 of the Regulation is being provided (see Schedule 21 for more details). The Regulation provides that the *Ontario Water Resources Act* approval is revoked on the date the owner submits this statement to the Director, which means the drinking water system will no longer be subject to the requirements of the *Ontario Water Resources Act* approval – and will, instead, be regulated by the Drinking-Water Systems Regulation under the *Safe Drinking Water Act*.
- If you have been granted relief, under O. Reg. 170/03, by the MOE Director from complying with all requirements to provide treatment equipment you are exempt from preparing an Engineering Evaluation Report and submitting this written notice to the MOE Director.

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[6] According to section 2 of the *Safe Drinking Water Act*, "alteration" includes the following, in respect of a drinking-water system, but excludes repairs to the system: (1) an extension of the system, (2) a replacement of part of the system, (3) a fragmentation of the system, and (4) taking all or part of the system permanently out of service

Step 6:
Have A 'Certified Operator' Adjust Equipment and Conduct Operational Checks

Drinking water systems that fall within the large non-municipal non-residential category must have a certified operator as specified under the *Safe Drinking Water Act*.

The Ministry of the Environment filed a new regulation governing the certification of operators on May 14, 2004. The regulation came into effect on August 1, 2004. The regulation is known as the Certification of Drinking-Water System Operators and Water Quality Analysts Regulation or O. Reg. 128/04.

A certified operator is a person who:

- conducts operational checks or adjusts, tests, or evaluates a process that controls the effectiveness or efficiency of a subsystem; and
- adjusts or directs the flow, pressure, or quality of water within the subsystem, if the person works in a distribution subsystem or a distribution and supply subsystem.

Who can operate my drinking water system and conduct operational tests?

Section 12 (1) of the *Safe Drinking Water Act* requires that only persons holding a valid operator's certificate can operate a municipal system, or a regulated non-municipal system. Your system is defined as a **'large non-municipal non-residential drinking water system'** and therefore is a regulated non-municipal system that requires a certified operator. Specifically, your drinking water system will require a person who holds a "Limited Groundwater" or "Limited Surface Water" Certificate, depending on the source of your water. Persons holding a Class I-IV Water Treatment Certificate are also qualified to operate your system.

You are required to have a certified operator by the date you are required to have installed new treatment equipment under O. Reg. 170/03. Drinking water systems in **the large non-municipal non-residential category** must install treatment equipment by July 1, 2006 for both surface water sources and groundwater sources.

Since new systems must immediately comply with the treatment requirements, your new system will require having a certified operator immediately as well.

Certification qualifications are specified in O. Reg. 128/04, the Certification of Drinking water System Operators and Water Quality Analysts Regulation. Additional information can be found in "The Certificate Guide for Operators and Water Quality Analysts of Drinking water Systems". You can access this guide by going to the Ministry of the Environment web site at www.ene.gov.on.ca, clicking on the Water section and going to Research and Publications.

O. Reg. 170/03 requires that the following duties must be performed by a certified operator in systems such as yours:

- make all adjustments to the water treatment equipment;
- examine, within 72 hours after the tests are conducted, the results of continuous monitoring equipment;
- be promptly dispatched to the drinking water system if alarms sound as a result of equipment malfunction or loss of power or a test result which is above the maximum or below the minimum alarm standards established by the Regulation;
- perform all total chlorine residual, free chlorine residual, turbidity or fluoride testing required; and
- perform regular checks on water treatment equipment to confirm proper functioning.

The qualifications for a "Limited Groundwater" or "Limited Surface Water" Certificate are:

- Pass the applicable examination
- Grade 12 or equivalent (Persons who have one month of experience working with water systems between August 1, 2003 and August 1, 2004 require Grade 10 or equivalent.)
- Complete entry level course (applies only to persons who apply after August 1, 2005)

Do I need a certified operator to conduct operational water tests?

Testing for the 24 operational parameters listed under subsection 2(1) of the Drinking Water Testing Services Regulation, O. Reg. 248/03 (e.g. testing for chlorine residual, turbidity, alkalinity, pH), can be done by a qualified person. A qualified person includes a certified drinking water operator, and a water quality analyst.

A water quality analyst means a person who holds a water quality analyst's certificate, issued under O. Reg. 128/04. To secure such a certificate a person must meet certain education and experience requirements, and pass an exam. More details about these requirements are included in the Guide referred to below.

How can I access more information on the certification and training requirements for an operator and water quality analyst?

You are encouraged to read the ministry's 'Certification Guide for Operators and Water Quality Analysts of Drinking Water Systems'

The Guide describes in detail the operator and water quality analyst certification program including:

- the responsibilities of an owner with regard to operator and water quality analyst certification
- operating standards that owners are expected to have in place with regard to operators employed in their system
- the qualifications required for different types of operator certificates and the study material that will assist operators to prepare for a certification exam
- the qualification requirements for a water quality analyst certificate
- the annual training that operators and water quality analysts need to take for certificate renewal and the process for renewing a certificate, and
- the fee structure for certificates.

The Guide and application forms are posted on the ministry's web site at www.ene.gov.on.ca in the Water Section, under Research and Publications, as well as the web site of the Ontario Environmental Training Consortium, www.oetc.on.ca. The OETC is the organization that administers the certification program for the ministry. Please contact the OETC at 905-796-2851 for any questions concerning the "Limited" Certificates.

What operational checks must I undertake?

In accordance with Schedule 8 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must ensure that a certified operator performs a regular operational check to ensure that all water treatment equipment is properly functioning, as specified in the maintenance schedule of the Engineer's Evaluation Report.

You must ensure that a certified operator or water quality analyst samples and tests your water for turbidity, and free residual chlorine or combined chlorine residual, if applicable. Operational checks for turbidity and chlorine residual should be conducted on-site.

Whenever a sample is taken, the person taking the sample must record the date and time the sample was taken, the location the sample was taken and the person's name. In addition, the record should include the date and time the sample was tested and the results of the tests (and the name of the person who conducted the test, if this is a different person from the person who took the sample).

Note: You may have a person other than a certified operator or water quality analyst perform operational checks, but only until your treatment deadline comes into effect (July 1, 2006 for both surface water sources, and groundwater sources).

How do I test for turbidity?

Surface Water Using Filtration:
If continuous monitoring equipment is required on filtration equipment (i.e. direct filtration, conventional filtration, Diatomaceous Earth Filtration and membrane filtration – see procedure for disinfection) to comply with the treatment performance requirements of Schedule 2, you must ensure that sampling and testing for turbidity is conducted by continuous monitoring equipment on each filter effluent line. If continuous monitoring equipment is not required, (if you use slow sand filters or cartridge filters – see procedure for disinfection) then you must ensure that a daily water sample is taken on each filter effluent line and tested for turbidity.

Other:
At least one sample per month shall be taken and immediately tested for turbidity before the raw water enters the treatment system. When testing for turbidity, a turbidity meter that measures turbidity in Nephelometric Turbidity Units (NTUs) must be used. See Schedule 6 of the Regulation.

How do I test for residual chlorine?

Primary Disinfection – Chlorination:
A sample shall be collected at least once per day and immediately tested for free chlorine residual in the treatment process at the end of contact time as required in the Ministry's "Procedure for Disinfection of Drinking Water in Ontario."

Secondary Disinfection – Chlorinating or Chloramination:
Samples shall be collected from the distribution system, at least once every day and immediately tested for free chlorine residual or combined chlorine residual.

What exception exists for large non-residential systems?

Large non-residential systems are not required to perform operational checks on days when all public facilities served by the drinking water system are not open. Section 3 of the Drinking-Water Systems Regulation states that a public facility is open on a day unless persons served by the facility are denied access to the facility during the entire day. A place that is both a designated facility and a public facility is open on a day when either the designated facility or the public facility is open.

Step 7:
Undertake Operational Checks

Please note that every time a water sample is collected for microbiological testing, a measurement of free chlorine residual (where chlorination is provided) or combined chlorine residual (where chloramination is provided) must be conducted at the same time and same location and noted on the *Laboratory Chain-of-Custody Form.* This measurement of chlorine residual taken with a microbiological sample can satisfy a daily requirement to test for chlorine residual under the Regulation.

Schedule 8 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers operational checks.

What are my monitoring and reporting requirements?

Compliance Calendar for Periodic Monitoring & Reporting Requirements

FREQUENCY	MONITORING WATER QUALITY AND PROPER FUNCTIONING OF EQUIPMENT	PREPARING AND RECEIVING RECORDS/REPORTS	DISTRIBUTING AND RETAINING (ON-FILE) REPORTS/RECORDS
At least once a day	**Measure free chlorine residual (if using chlorination) or combined chlorine residual (if using chloramination)** **Primary Disinfection (Chlorination)** ◆ Ensure that a water sample is collected and tested immediately for free or combined chlorine residual at least once every day in the treatment process at the end of contact time in accordance with the Ministry's *"Procedure for Disinfection of Drinking Water in Ontario."* (optimum 1.0 mg/L). ◆ If the system uses chloramination, sampling and testing for combined chlorine residual is to be carried out by continuous monitoring equipment. **Secondary Disinfection** ◆ Ensure that a distribution sample is taken at least once every day and is tested immediately for free chlorine residual (if system provides chlorination optimum 0.2 mg/L) or combined chlorine residual (if the system provides chloramination (Optimum 1.0 mg/L). (Reg. Schedule 8)	◆ For each sample, make a record of the date and time the sample was tested, the name of the person who performed the test and the test results and note them on the *Laboratory Chain-of- Custody Form*if the test was done on a microbiological sample submitted to a licenced laboratory. (Reg. Schedule 6)	◆ Keep every record made on free chlorine residual or combined chlorine residual tests for at least 5 years. (Reg. Section 13)
Surface Water Using Filtration Continuously, if using continuous monitoring equipment At least once a day if not required to use continuous monitoring equipment **Other** At least once per month	**Measure turbidity** **Large Non-Residential** **Surface Water Using Filtration** ◆ If continuous monitoring equipment is required, ensure the sampling and testing for turbidity is conducted by continuous monitoring equipment on each filter effluent line. ◆ If continuous monitoring is not required, at least one sample per day shall be collected and immediately tested for turbidity on each filter effluent line. **Other** At least one sample per month must be taken and immediately tested for turbidity before the raw water enters the treatment system. (Reg. Schedule 8)	◆ For each sample taken, make a record of the date and time the sample was tested, the name of person who performed the test and the test results. (Reg. Schedule 6)	◆ Keep every record made on turbidity tests for at least 5 years. (Reg. Section 13)

Twice a week if not chlorinating or chloraminating Once a week if chlorinating or chloraminating	**Test for microbiological parameters in treated water** Collect treated samples from the distribution system or plumbing. Send samples to a laboratory licenced to test (i) *E. coli* or fecal coliforms, (ii) total coliforms and (iii) HPC. (Reg. Schedule 11)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 5 years. (Reg. Section 13)
Frequency specified in maintenance schedule of Engineer's Evaluation Report	**Check of Treatment Equipment** ◆ Ensure that a certified operator checks all water treatment equipment to confirm that it is functioning properly. (Reg. Schedule 8)	◆ For each equipment check, make a record of the date and time, the name of the person who performed it, and the results. (Reg. Schedule 8)	◆ Keep every record of an Operational Check made for at least 5 years. (Reg. Section 13)
Once a month	**Test for coliforms in raw water** ◆ Collect raw water samples from the untreated water source; and IF using groundwater, then from each well. ◆ Send samples to a laboratory licenced to test (i) *E. coli* or fecal coliforms and (ii) total coliforms. (Reg. Schedule 11)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 5 years. (Reg. Section 13)
Every 3 months	**Test for nitrate and nitrite and trihalomethanes (only for systems that chlorinate or chloraminate)** Collect samples from the point where water enters the distribution system or plumbing (except trihalomethanes [THMs] the sample must be taken from a point in the distribution system that is likely to have an elevated potential for the formation of THMs). Send samples to a licenced laboratory for testing. (Reg. Schedule 13)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Once a year	**Test for lead** ◆ Collect samples from the point in the distribution system that is likely to have an elevated concentration of lead. Send samples to a licenced laboratory for testing. (Reg. Schedule 13)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)

Once a year (surface water source) Every 3 years (groundwater source)	**Test for all organic and inorganic parameters listed in Schedules 23 and 24 of the *Drinking-Water Systems Regulation*** ◆ Collect samples from the point where water enters the distribution system or plumbing. Send samples to a licenced laboratory for testing. (Reg. Schedule 13)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Every 5 years	**Test for sodium and fluoride** Collect samples from the point where water enters the distribution system or plumbing. Send samples to a licenced laboratory for testing. Note: Fluoride samples can be a collected and tested by a "Certified Operator" or by a water quality analyst. (Reg. Schedule 13)	◆ Receive a report of the analytical results from the laboratory. (Reg. Schedule 6)	◆ Keep every report of analytical results given to you by the laboratory for at least 15 years. (Reg. Section 13)
Once a year	**Prepare Annual Report**	◆ Prepare and submit an annual report using the format provided by the Ministry of the Environment through DWIS. (Reg. Section 11)	◆ Send annual report to: 1. Electronically to the Ministry; 2. Every person who requests a copy. ◆ Keep copies of the annual report for at least 5 years. (Reg. Section 13)
Every 5 years (surface water source) Every 10 years (groundwater source)	**Prepare an Engineering Evaluation Report and submit a written notice to the Ministry** (within 7 days after the engineering evaluation report is required to be prepared). (Reg. Schedule 21)	◆ This written notice must include a copy of an engineer's written opinion that all equipment required for treatment (schedule 2) and operational checks (schedules 6, 8) is being provided and the reasons for the opinion. (Reg. Schedule 21)	◆ Keep your Engineering Evaluation Report for at least 15 years. (Reg. Section 13)

Step 8: Determine if You Can Apply for Full Relief from Requiring Any Treatment

As recommended by Commissioner O'Connor, the Drinking-Water Systems Regulation (O. Reg. 170/03) allows certain owners to apply for an approval from the Ministry of the Environment relieving them of the requirement to provide minimum treatment. This relief is only allowed, however, if the owner is able to demonstrate that the safety of the drinking water provided by the owner's system meets acceptable risk-based standards. This process is not available to owners of drinking water systems that obtain their water from a surface water source, including groundwater systems under the influence of surface water.

Those who wish to go through this process have to make an application that provides a comprehensive range of information based on a risk analysis and management plan.

Who can apply for full relief from treatment requirements?

Owners of a non-municipal drinking water system that obtains water from a groundwater source can apply for relief from all treatment requirements (found in Schedule 2 of the Drinking-Water Systems Regulation).

How do I apply?

Drinking water system owners who wish to apply for relief must obtain the services of a professional engineer in order to make the necessary assessments required by the application. The engineer must follow the Ministry of the Environment's "Guide for Applying for Approvals Related to Municipal and Non-Municipal Drinking water Systems," and must complete the appropriate submissions.

Submissions or activities that are required to be carried out by the engineer as part of an application process include:

- a written statement that confirms that he or she has requested all information related to the drinking water system from the local health unit, has consulted with the Local Medical Officer of Health about potential health issues or concerns related to the drinking water system, and has set out in the statement any issues or concerns raised;
- a characterization of the drinking water system's raw water supply that includes a minimum of 24 CONSECUTIVE months microbiological sample history, a statement concluding that there are no significant and rapid shifts in chemical and physical characteristics that indicate surface water influence (that is, pH, turbidity, temperature, nitrate, nitrite, and conductivity), and copies of any other records that show past evidence of surface-water contamination (such as, presence of viruses, chlorophyll a, protozoan cysts, macro-organisms);
- surveys and analyses prepared by or under the supervision of the engineer that deal with the potential risks of microbiological contamination related to each of the following: well construction and well-head protection, the well-head vicinity and recharge zone, and distribution system and plumbing; and
- a proposed management plan prepared by or under the supervision of the engineer that provides guidance for operations related to preventing, reducing and managing microbiological risks[7].

Notify the Ministry using DWIS

Notification of your intent to apply for regulatory relief must be made using the approved notice - *Notification of Intent to Apply for Relief* - which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

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[7] A proposed management plan for preventing, reducing and managing microbiological risks should include the following components: (1) operating procedures relating to the maintenance activities at the start of an operating season and relating to routine flushing and disinfecting activities (you must also include written operating procedures relating to increased monitoring activities after adverse weather events such as heavy rainfall or floods); (2) logs relating to samples taken (include location, sample times, signatures, and test results); (3) a protocol for notification (and a contact list) that clearly describes the steps to notify the users of the system, Ministry of the Environment, and the Local Medical Officer of Health upon adverse events and the importance of keeping contact lists up to date; (4) a procedure for corrective action upon adverse events that is consistent with the Ministry procedure entitled, "Procedure For Corrective Action for Systems Not Currently Using Chlorine"; and (5) a procedure for making records, in order to summarize any corrective actions taken, the results of the corrective action, and the resolution of the issues that gave rise to the corrective actions.

Must I consult with the users of my system?

Ensure that the occupants of all private residences served by the system are notified of the application and given reasonable opportunity to make comments. A written summary of those comments and responses must also be prepared before the application for relief is made to the Ministry of the Environment.

What exemptions exist for non-residential systems (under section 6)?

If you own a non-residential system that is connected to and receives water from a drinking water system that is subject to O. Reg. 170/03, and that provides secondary disinfection in accordance with the Regulation, and the owner of the system providing the water has agreed in writing to ensure that 1) the secondary disinfection equipment is operated so that at all times and at all locations within your distribution system the required free or combined chlorine residual is maintained (whichever applies), and 2) to sample and test the water in the distribution system of the system that obtains the water as if it were part of the distribution system of the system providing the water, you are exempt from most of the requirements of O. Reg. 170/03. Refer to section 6 of the Regulation for more details about these requirements.

NOTE: A network of pipes that is located on a single property and that is connected to a regulated drinking water system is not considered to be a drinking water system to which O. Reg. 170/03 applies. To be considered as a connected drinking water system to which section 5 or 6 exemptions from regulatory requirements apply, the network of pipes that receives water from the regulated system would have to be located on more than one property.

What exemptions exist for non-residential systems receiving transported water (under section 7)?

If you own a non-residential system that receives transported water from a drinking water system that is subject to O. Reg. 170/03, and that provides secondary disinfection in accordance with the Regulation, you are exempt from most requirements of the regulation but still have to monitor chlorine residual in your system on any day in which a designated or public facility is open.

Note that if your system provides disinfection equipment for primary disinfection that does not use chlorination or chloramination, you do not have to monitor chlorine residual if your disinfection equipment is properly alarmed. Refer to section 7 of the Regulation for more details about these requirements.

Schedule 5 of the *Drinking-Water Systems Regulation* (O. Reg. 170/03) covers the application for full relief from all treatment requirements.

Step 9:
Notify Authorities of Adverse Test Results and Other Problems

The Drinking-Water Systems Regulation (O. Reg. 170/03) continues to require mandatory reporting of adverse test results to both the Local Medical Officer of Health and the Ministry of the Environment.

Here is how the notification of an adverse test result works:

☐ The licenced laboratory identifies an adverse result.
☐ The licenced laboratory notifies the system owner, the Ministry's Spills Action Centre (SAC), and the Local Medical Officer of Health (LMOH).
☐ The owner notifies SAC and LMOH.

What adverse test results and other problems must I report?

The following adverse test results must be reported immediately to the Ministry of the Environment's Spills Action Centre and the Local Medical Officer of Health in accordance with section 18 of the *Safe Drinking Water Act* (SDWA):

- a result that exceeds any of the standards listed in Schedules 1, 2 or 3 of the Ontario Drinking-Water Quality Standards Regulation;
- a result indicating the presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci* in a sample of drinking water;
- a result indicating the presence of a pesticide not listed in Schedule 2 of the Ontario Drinking-Water Quality Standards Regulation is detected in a sample of drinking water;
- if chlorination is used, a result indicating that the concentration of free chlorine residual is less than 0.05 mg/L in a distribution sample;
- if chloramination is used, a result indicating that the concentration of combined chlorine residual is less than 0.25 mg/L in a distribution sample;
- a test result exceeding the maximum concentration for a parameter identified under an approval or order as a health-related parameter;
- if filtration is required, a result indicating the turbidity is more than 1.0 NTU in filter effluent; if grab sampling or, if continuously monitoring, more than 1.0 NTU in 2 consecutive filter effluent samples taken 15 minutes apart (report only once per 24 hours);
- a result indicating the sodium concentration exceeds 20 mg/L in a sample of drinking water (report only once per 5 years); or
- a result indicating the fluoride concentration exceeds 1.5 mg/L in a sample of drinking water (report only once per 5 years).

In addition, any observation that indicates that a drinking water system that provides (or is required to provide) disinfection is directing water that has not been properly disinfected to users, must also be reported immediately to the Ministry's Spills Action Centre and the Local Medical Officer of Health, in accordance with section 18 of the SDWA.

Who must I notify and how must I notify them of these problems?

Step 1, Make immediate report (by telephone or in person).
Immediately report the adverse result or other problem to the Ministry's Spills Action Centre (telephone 1-800-268-6060) and the Local Medical Officer of Health, by speaking with someone in person or on the telephone.

When you make a report, you must specify the adverse test result or the observation that your drinking water system has not adequately disinfected water directed to users of the system, and the action or appropriate corrective action that is being taken.

Step 2, Deliver written notice.
You must deliver written notice within 24 hours of giving the immediate verbal notice using the approved notice available through DWIS. The written notice must indicate the problem and the appropriate corrective action that is being taken. Send the written notice to:

- the Local Medical Officer of Health; and
- the Ministry of the Environment's (MOE) Spills Action Centre (Submit through DWIS).

Step 3. Deliver follow-up notice of action taken.

You must deliver follow-up written notice within 7 days of resolving the issue that gave rise to the first notice using the approved notice available through DWIS. The follow-up written notice must summarize the action taken and the results achieved to the Local Medical Officer of Health, and the MOE Spills Action Centre.

Use the approved notices available in DWIS

Written notice of any adverse test results or other problems, followed by a second notice detailing the resolution of the problem, must be made using the approved notices, which are to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

- *Written Notice of Adverse Test Results and Other Problems*
- *Notice of Issue Resolution at Drinking Water Systems* (AWQI-NR)

Submit the written notice to the Spills Action Centre by going to the Ministry of the Environment's website, then accessing DWIS. Log in by entering your user name and password, and select the appropriate notice.

Within 24 hours of giving the required immediate verbal notice of any problem, drinking water system owners must also submit the notice to the Local Medical Officer of Health.

Once the issue is resolved, complete the *Notice of Issue Resolution at Drinking Water Systems*. Submit it to the Ministry though DWIS and submit another copy to the Local Medical Officer of Health.

Step 10: Take Corrective Action

In the event that your system experiences an adverse test result or you observe that your system is not properly disinfecting water that is being directed to users, not only must you notify the appropriate authorities (including the Ministry of the Environment and the Local Medical Officer of Health), but you must also take corrective action to protect the users of your water. There are different types of corrective actions depending on the type of water quality problem you may find in your samples. Schedule 18 of the *Drinking-Water Systems Regulation* (O. Reg. 170/03) describes different corrective actions that are required following certain adverse test results or observation of certain problems.

What Corrective Actions Must I Take When Adverse Test Results are Received or Other Problems are Observed?

(Schedule 18 of O. Reg. 170/03)

Adverse test result or other problem	Water use	Treatment	Sampling and testing	Consult with ...
Water not disinfected properly has been directed to users	Take steps to notify users to use an alternate source of drinking water or recommend that users bring water to a rapid boil for at least one minute before use.	Restore the disinfection.		Local Medical Officer of Health
If filtration is required, the turbidity in filter effluent is more than 1.0 NTU	Take steps to notify users to use an alternate source of drinking water or recommend that users bring water to a rapid boil for at least one minute before use if problem can not be resolved quickly.	1. Check equipment, backwash or replace filters, and correct any other faulty processes. 2. If resample confirms exceedance, follow manufacturer's servicing recommendations and flush the distribution system and plumbing.		Local Medical Officer of Health
If chlorination is used, free chlorine residual is less than 0.05 mg/L in a distribution sample	Take steps to notify users to use an alternate source of drinking water or recommend that users bring water to a rapid boil for at least one minute before use if problem can not be resolved quickly.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, on next page).	Test to ensure that a 0.2 chlorine residual is achieved.	Local Medical Officer of Health
E. coli or fecal coliform detected from any one sample.	Take steps to notify users to use an alternate source of drinking water or recommend that users bring water to a rapid boil for at least one minute before use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, on next page).	Immediately resample and test (see note 2, on next page). Continue corrective action until *E. coli* or fecal coliforms are no longer detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms total coliforms (but not fecal coliforms).	Take steps to notify users to use an alternate source of drinking water or recommend that users bring water to a rapid boil for at least one minute before use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, on next page).	Continue corrective action until total coliforms are no longer detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health

Resample test confirms more than 200 Background CFU/100mL (but not fecal coliforms) on a total coliform membrane filter.	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until less than 200 Background CFUs/100 mL are detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms more than 500 CFU/mL (but not fecal coliforms) on a heterotrophic plate count (HPC).	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2 mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until less than 500 CFUs/mL are detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci*.	Consult with Local Medical Officer of Health on water use.	Increase chlorine dose to achieve a 0.2mg/L residual in the distribution system, and flush the distribution system and plumbing (see note 1, below).	Continue corrective action until *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp., or fecal *streptococci* are not detected in 2 consecutive sets of samples taken 24 to 48 hours apart.	Local Medical Officer of Health
Resample test confirms exceedance of a chemical and radiological parameter listed in Schedule 2 or 3 of the *Ontario Drinking water Quality Standards Regulation* (O. Reg. 169/03)	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms that a pesticide NOT listed in Schedule 2 of the *Ontario Drinking water Quality Standards Regulation* (O. Reg. 169/03) is detected.	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms exceedance of the maximum concentration for a parameter identified under an approval or order as a health-related parameter	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health
Resample test confirms a sodium concentration that exceeds 20 mg/L and a report has not been made in the previous 5 years	Consult with Local Medical Officer of Health on water use.	Consult with Local Medical Officer of Health on further sampling and testing.		Local Medical Officer of Health

Note 1: If you are not currently using chlorine, take the corrective action as outlined in the Ministry's "Procedure for Corrective Action for Systems Not Currently Using Chlorine" (available on the Ministry's Web site, www.ene.gov.on.ca).

Note 2: "resample and test" (as defined in O. Reg. 170/03) for a microbiological parameter means that you must immediately collect and transport a set of at least 3 drinking water samples for the parameter, which caused the adverse water quality to your licenced laboratory for analysis. The first sample must be from the same location as the sample that gave rise to the corrective action. The second sample must be from a location that is a significant distance upstream from the location of the adverse result, where reasonably possible, and the third sample must be from a location that is a significant distance downstream from the adverse result, where reasonably possible.

To "resample and test" for a parameter that is not a microbiological parameter means that you must collect and transport a water sample for the parameter which caused the adverse water quality from the same location as the sample that gave rise to the corrective action to your licenced laboratory for analysis.

When is it necessary to post a warning notice?

Under Schedule 19 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must post a warning notice:

- if you are not presently in compliance with microbiological sampling and testing requirements of Schedule 11
- if you did not carry out the appropriate corrective action required under Schedule 18; and/or
- if you must, as a corrective action, notify all users to use an alternate source of water or to boil the water for at least one minute before using.

Warning Notices do NOT provide a regulatory exemption! The warning notices required to be posted in accordance with Schedule 19 are a temporary and additional requirement meant to protect public health, the fundamental objective of this regulation. They do not relieve the owner of any regulatory requirements. The owner must still comply with the requirements of Schedule 11, 12 or 18 as soon as possible despite posting a warning notice.

Where do I post the warning notice?

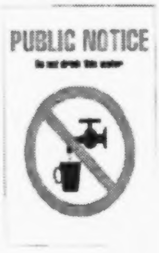
Post the notice in a prominent location where it is likely to be seen by those using water from the system. If you fail to post a warning notice at your drinking water system, a provincial officer or public health inspector may do so instead.

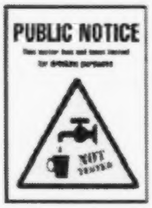
What must the warning notice say and where can I obtain them?

Warning notices must be in a form provided by or approved by the Director. There are two warning notices available from the Ministry of the Environment for the purposes of posting warning notices of potential problems. The proper notice must be used according to the specific situation described above. You may also wish to indicate where an alternate source of drinking water can be obtained, if applicable.

Use the approved notice(s).

You must post warning notices upon receiving notification of the following adverse test results or adverse conditions: improper disinfection (18-2), turbidity (18-3), chlorine residual (18-4), *Escherichia coli* (18-5), AND if corrective action has not been taken. For copies of "Warning Notice of Non-Compliance of O. Reg. 170/03", contact the Ministry of the Environment's Public Information Centre at 1-800-565-4923 or (416) 325-4000.





Step 11:
Post Warning Notices of Potential Problems

Owners are required to post a warning notice if you are not currently complying with the microbiological testing regime required by the Drinking-Water Systems Regulation (O. Reg. 170/03) or if you did not carry out the necessary corrective actions for some reason. These warning notices have to be posted in prominent locations to alert users of the system.

For copies of warning notices, contact the Ministry of the Environment's Public Information Centre at 1-800-565-4923 or (416) 325-4000.

Warning notices do NOT exempt you from the regulation!

The warning notices referred to on this page are a temporary and additional requirement to protect public health. They do not relieve the drinking water system owner of any regulatory requirements. The owner must still comply with the requirements as soon as possible despite posting a warning notice.

Schedule 19 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the posting of warning notices.

Step 12: Make Information Available to the Public

Under section 12 of the Drinking-Water Systems Regulation (O. Reg. 170/03), you must make certain reports and documents available on site at each drinking water system, so that interested persons may read them on request, free of charge, during normal business hours.

Section 12 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers the information that must be made available.

What reports and documents must I make available to the public?

- Every test result (not older than two years) required by O. Reg. 170/03, or O. Reg. 459/00 or under an approval or order;
- Every approval and order issued (not older than two years) that applies to your drinking water system and that is still in effect, if it was issued after January 1, 2001;
- Every annual report prepared under Section 11 of O. Reg. 170/03 or under O. Reg. 459/00 for the past two years;
- A copy of the Drinking-Water Systems Regulation (O. Reg. 170/03); and
- A copy of every Engineering Evaluation Report for the past two years.

How do I prepare my Annual Report?

To make the preparation of this report as easy as possible, the Ministry of the Environment has designed an Annual Report template which MUST be used and is available on the Ministry's website through DWIS. The following is a summary of the type of information you will need to complete the Ministry's Annual Report template:

- information on your drinking water system (i.e., name and address of the drinking water system and the name and address of the owner of the drinking water system, the category of the drinking water system, the name of the local Public Health Unit, the population being served, public facilities served, the pumping capacity and capacity and a list of the water treatment chemicals used by the system during the period covered by the report);
- information on your drinking water source (groundwater, surface water or groundwater under the direct influence of surface water);
- information on the number of adverse test results during the reporting period for microbiological, chemical, chlorine residual and turbidity;
- summary of microbiological and chemical results;
- information on parameters not required during the reporting period;
- information on additional testing and sampling carried out in accordance with the requirement of an approval or an order;
- description of the corrective actions undertaken under Schedule 18;
- information on major expenses incurred during the period covered by the Annual Report (such as the cost of treatment equipment, instrumentation for measuring chlorine levels, etc.); and
- information on how the Annual Report was shared with drinking water users (for example, a copy of the Annual Report was given to every person who requested it).

Use the approved format available in DWIS.

- Submitting the Annual Report.

You must use the Ministry's Annual Report Template, which is to be completed and submitted electronically through DWIS. Access DWIS from www.ene.gov.on.ca, click on Water, and then click on Drinking Water Information System.

When is the first Annual Report due?

- If a large non-residential system was required to submit a quarterly report under O. Reg. 459/00, the first report was due December 31, 2003 and should have covered the period from April 1, 2003 to October 31, 2003.
- If a large non-residential system not subject to O. Reg. 459/00 or O. Reg. 505/01, then the first report was due December 31, 2003 and should have covered the period from June 1, 2003 to October 31, 2003.

Note, if your drinking water system is connected to and receives all of its drinking water from another drinking water system, the owner of the drinking water system from which the water is obtained must ensure that the owner of the connected drinking water system is given a copy of the Annual Report.

Step 13:
Prepare and Submit an Annual Report

In order that the public has access to information on the status of drinking water, an Annual Report on the operation of your drinking water system must be prepared using a prescribed format, made available to the public and submitted to the Ministry of the Environment.

The Annual Report must cover the period from November 1st of the previous year through to October 31st of the current year, and the report must be submitted by December 31st of each year.

The annual report is to be submitted electronically through DWIS.

Section 11 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers Annuals Reports.

What records must I retain? And for how long?

As a drinking water system owner, you must keep copies of the following records for at least five years:

- Every record or report of test results for microbiological parameters and operational checks, as required under section 7, Schedules 6-12 or sections 18-5 to 18-9 of Schedule 18 of O. Reg. 170/03.
- Every annual report prepared under Section 11 of O. Reg. 170/03.
- Every record or report related to a test result under an approval or order, unless the record or report relates to an organic or inorganic parameter listed in Schedule 23 or 24 of O. Reg. 170/03 or a parameter listed in Schedule 3 of the Ontario Drinking water Quality Standards Regulation (O. Reg. 169/03).
- Every record or report of test results for microbiological parameters prepared under section 7, and clause 9(b) of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003.
- Every annual report prepared under section 12 of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003.

As a drinking water system owner, you must keep copies of the following records for at least 15 years:

- Every record or report of test results for chemical parameters as required by Schedule 13 and 18 of O. Reg. 170/03.
- Every record or report related to a test result under an approval or order if the record or report relates to an organic or inorganic parameter listed in Schedule 23 or 24 of O. Reg. 170/03 or a parameter listed in Schedule 3 of the Ontario Drinking water Quality Standards Regulation (Reg. 169/03).
- Every Engineering Evaluation Report prepared under Schedule 21 of O. Reg. 170/03.
- Every record or report of test results for chemical parameters prepared under section 7 and clause 9(a) of Ontario Regulation 459/00 before the Regulation was revoked on June 1, 2003.
- Every report relating to the drinking water system's raw water supply prepared under paragraph 7 of subsection 2(2) (written report concluding that the system's raw water is groundwater under the direct influence of surface water) or subsection 2(3)(a) (written report prepared after August 1, 2000, concluding that the raw water supply is not groundwater under the direct influence of surface water).
- If the owner gave the Director a written statement by a professional engineer under subsection 21-2 (3) of Schedule 21, a copy of the OWRA approval referred to in that section.

Step 14:
Retain Required Reports and Documents

Under section 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03), drinking water system owners and laboratories must keep copies of certain reports and documents on file.

If the Ministry of the Environment Director or provincial officer requests your records, you must send them within the period requested.

Section 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers record keeping.

This is the second guide in a four-guide resource package.

The Ontario Ministry of the Environment has prepared a series of guides for the four categories of regulated, non-municipal drinking water systems. If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, download an electronic version from the Ministry's website at www.ene.gov.on.ca, or call our Public Information Centre at 1-800-565-4923. See the back page of this guide for other sources of information.

Guide 1, Does the Regulation Apply to Me?

Guides 2A-2D, A Guide for Regulated, Non-Municipal Drinking water Systems

- Guide 2A, Non-Municipal Seasonal Residential Systems
- Guide 2B, Non-Municipal Year-Round Residential Systems
- Guide 2C, Small Non-Municipal Non-Residential Systems
- Guide 2D, Large Non-Municipal Non-Residential Systems

Guide 3, How to Collect Drinking Water Samples

Guide 4, Glossary of Terms

Note: reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03), the *Safe Drinking Water Act*, 2002, and the other related regulations and procedures to ascertain an owner/operator's specific legal requirements. See back cover for details.

Obtain the Specific Information You Need to Meet Your Regulatory Responsibilities

The Resource Package for Regulated Non-Municipal Drinking water Systems contains a number of components that, together, are designed as a support tool to help owners and operators of regulated systems deliver safe, clean drinking water. Titles in this resource package will help you:

☐ determine whether the system you own or operate is regulated under O. Reg. 170/03;
☐ provide more detailed information for each of the four categories of regulated, non-municipal drinking water systems;
☐ show you how to collect samples and have them analyzed; and
☐ provide definitions of key technical and water management terms.

If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, or download an electronic version from the Ministry's website at www.ene.gov.on.ca.

How do I obtain the documents and contact information I need?

How can I obtain a copy of the Drinking-Water Systems Regulation and additional information on my regulatory responsibilities?	Visit the Ministry website at www.ene.gov.on.ca, click on "Water" then scroll down the page and click on "Drinking-Water Systems Regulation – Information Page" (http://www.ene.gov.on.ca/envision/water/sdwa/dwsr.htm). This will take you to a full page of links to key documents, technical updates, laboratory licencing information, legislation and regulations, forms, general information and related documents. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
How do I find a licenced laboratory for analyzing my water samples?	Check the Ministry website for a list of laboratories licenced to perform drinking water testing under the *Safe Drinking Water Act*, available at: http://www.ene.gov.on.ca/envision/water/sdwa/licencedlabs.htm. You can also call the Ministry of the Environment Laboratory Licencing Administrator at 416-235-6370.
How do I contact the Local Medical Officer of Health or the Public Health Unit for my community?	Check the "Blue Pages", under the heading "Health", in your local telephone directory for the listing of your public health unit. You can also visit the website of the Ministry of Health and Long-Term Care (MOHLTC) at www.health.gov.on.ca, or call the MOHLTC info-line at 1-800-268-1154, or 416-314-5518 in Toronto.
Where can I find the nearest local or regional office of the Ministry of the Environment?	Check the "Blue Pages", under the heading "Environment", in your local telephone directory. You can also visit the Ministry website at www.ene.gov.on.ca and look under the heading "About the Ministry" on the home page. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
Where can I find more information on training and certification of system operators?	Contact the Ontario Environmental Training Consortium (OETC) through its website at www.oetc.on.ca, or by telephone at 905-796-2851. For more information, the new Certification of Drinking water System Operators and Water Quality Analysts Regulation (O. Reg. 128/04) is available at: http://www.e-laws.gov.on.ca/DBLaws/Regs/English/040128_e.htm.

The Ontario Drinking-Water Systems Regulation
(O. Reg. 170/03)

Guide 3:
How to collect drinking water samples

A Guide for Owners and Operators of **Regulated Non-Municipal Drinking Water Systems**

Ontario Ministry of the Environment
December 2004

Protecting our environment. Ontario

This publication is provided for information purposes only.

This guide is one guide of a four-guide kit designed to assist owners and operators of regulated non-municipal drinking water systems more fully understand their responsibilities in delivering safe, clean drinking water. However, readers are advised against using this document for compliance purposes. Reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03) and the *Safe Drinking Water Act, 2002* to ascertain an owner/operator's specific legal requirements and to determine whether or not a system is in compliance. The Act and its regulations may be obtained from Ontario's e-laws website at www.e-laws.gov.on.ca.

Drinking water samples are required for several reasons:

- to provide a level of assurance that the drinking water supplied by your system is safe to drink;
- to meet regulatory requirements;
- to determine changes in the quality of your source water (these changes will help you operate the system efficiently in the future);
- to determine the effectiveness of the treatment process, especially disinfection;
- to provide information on the integrity of the distribution system;
- to make operational changes (for example, change the solution strength, feed pump rate, etc.);
- to document the quality of your water supply; and
- to enable you to properly respond to customer complaints.

Remember, your test results are only as good as your sample!

Water Sampling and Analysis is Required by the Drinking-Water Systems Regulation (O. Reg. 170/03).

As a system owner, you are required by the Drinking-Water Systems Regulation (O. Reg. 170/03) to ensure that drinking water samples are taken from your system and tested for certain microbiological parameters, as well as certain organic and inorganic chemical parameters.

Schedules 6 to 15 of the Drinking-Water Systems Regulation (O. Reg. 170/03) cover sampling and testing.

Step One
Use a Licenced Laboratory. See Page 5.

- Which laboratories must I use to perform tests?
- How can I find out if a laboratory is Licenced?

Step Two
General Sample Handling. See Page 6.

- Must I follow instructions given to me by the laboratory?

Step Three
Where to Collect Samples. See Page 6.

- Where do I take distribution samples?
- How do I identify representative sampling locations?

Step Four
Testing for Microbiological Parameters. See Page 7.

- How do I collect the samples I need?
- How do I handle and store the samples?
- When and how must I test for chlorine residual?

Step Five
Testing for Organic Parameters. See Page 8.

- How do I collect the samples I need?
- How do I collect the samples I need for the analysis of volatile organic compounds?
- How do I handle and store the samples?

Step Six
Testing for Inorganic Parameters. See Page 9.

- What inorganic parameters must I sample for?
- How do I collect the samples I need?
- How do I handle and store the samples?

Step Seven
Records and Record Keeping. See Page 10.

- What information must be recorded when I collect samples?
- How long must sampling records be kept?

Step Eight
Finding More Information. See Page 10.

This Guide is designed to be user-friendly.
The right-hand, shaded column summarizes the contents of each section and highlights the basic requirements under the regulation. The left-hand side of the page contains the regulatory details needed to meet your regulatory responsibilities, as well as a reference to the appropriate section on the regulations. It is recommended that you refer to the text of the regulation itself for full compliance instructions.

Let's Get Started.

As an owner/operator of a regulated non-municipal drinking water system, you have an obligation to familiarize yourself with your regulatory requirements.

This guide provides a general overview on sample collection, handling, storage and transport. Detailed sampling instructions must be provided by the laboratory. Ensure that when contracting each laboratory to analyze your samples, you obtain specific directions on these issues from the laboratory staff. In some cases, the laboratory may also provide sample collection services as well.

Links to drinking water-related statutes, regulations and procedures, can be accessed through the Ministry's website at www.ene.gov.on.ca. See the back page of this guide for details.

Note, contact your laboratory for sampling instructions.
This general sampling guidance should only be followed where detailed laboratory instructions have not been provided or are not available. Where instructions from your laboratory are inconsistent with this general guidance, you must follow the directions of the laboratory to ensure accurate test results.

Which laboratories must I use to perform tests?

The laboratories that you use to test your samples must be Licenced by the Ministry of the Environment. To be Licenced, a laboratory must be accredited to test for specific parameters. While some laboratories may be Licenced to test for all the microbiological and chemical parameters required by the Regulation, others may be Licenced to test only microbiological parameters and/or only some chemical parameters. A laboratory that is not Licenced to test for a parameter can sub-contract the testing of that parameter to another laboratory that is Licenced for that parameter, but only with your consent

How can I find out if a laboratory is Licenced?

1. View the list of Licenced laboratories on the Ministry's web site: http://www.ene.gov.on.ca/envision/water/sdwa/Licencedlabs.htm , or
2. Contact the Public Information Centre at 1-800-565-4923 or (416) 325-4000, or
3. Contact a laboratory directly and ask them what they are Licenced to test for.

Step 1:
Use a Licenced Laboratory

The laboratory or laboratories that analyze your drinking water samples, as required by the Drinking-Water Systems Regulation, must be Licenced for each specific parameter that is being tested. As of October 1, 2003, you must select a laboratory that is Licenced by the Ministry of the Environment.

Part VII of the *Safe Drinking Water Act* and O. Reg. 248/03 (Drinking-Water Testing Services) cover the licensing of laboratories.

Step 2: General Sample Handling

As the owner of the drinking water system, you are required by the Regulation to ensure that samples are collected properly. Follow the directions of the testing laboratory in collecting drinking water samples.

Must I follow instructions given to me by the laboratory?

Make sure that all the people who are collecting drinking water samples from your system understand clearly that they must carefully follow the directions of the laboratory, including:

- collection procedures;
- the use of specified kinds of containers, or containers that are provided by the laboratory;
- the labelling of samples;
- the completion and submission of forms, including chain-of-custody forms that are provided by the laboratory. You must complete the mandatory fields in the chain-of-custody forms. Ensure that you have indicated whether or not the sample is a regulated sample;
- methods of transporting samples, including temperature conditions that must be maintained during transportation; and
- time periods for delivery of samples.

Step 3: Where to Collect Samples

In all cases, collect the samples from the location or point(s) stipulated in the Drinking-Water Systems Regulation (O. Reg. 170/03). This section provides guidance on taking "distribution samples" and selecting representative sampling locations.

See Schedules 6 to 15 of the Drinking-Water Systems Regulation (O. Reg. 170/03) for information on sampling locations.

Where do I take distribution samples?

Where the regulation states that "distribution samples" must be taken, you must ensure that these samples are representative of the whole system and taken from locations that are typical for your system. Distribution samples can be taken from distribution lines, but also can be taken from plumbing lines or fixtures where you have adequate access and where such locations are typical of your system. Distribution samples must be taken from points significantly beyond the point at which drinking water enters the distribution system or plumbing. However, for a small system (e.g., a system serving a single building), locations that are representative of the whole system may include some sampling locations that are close to the point where plumbing enters the building. These locations are acceptable.

How do I identify representative sampling locations?

When identifying sampling locations that are representative of the system, consideration must also be given to other characteristics that are unique to your system such as patterns of system usage, locations of storage tanks, dead-ends, stagnant lines, ageing water mains, extremities of the system, etc., especially locations where the degradation of water quality and disinfection residual are possible. The objective is to measure the quality of water being supplied to the consumer.

How do I collect the samples I need?

- Always ensure a clear pathway from the source to the sample collection point by removing aerators, tap screens, hoses, filters, etc., from any tap used during sample collection.
- Always allow the water to run for at least two minutes before collecting drinking water samples.
- Always use the sampling bottles provided by the laboratory. These will be sterile bacteriological sampling bottles containing the preservative sodium thiosulphate. If these bottles have tamper-proof seals and the seal has been broken, consider the bottle contaminated and request that the laboratory provide a new bottle.
- Do not rinse sample bottles containing preservatives, as this will remove some or all of the preservative, and ruin the sample.

NOTE: The purpose of the preservative in the sampling bottles is to prevent the collected water quality from degrading so that it no longer accurately reflects the quality of the water in your system.

- Do not touch or handle the preservative. Do not touch the inside or lip of the sampling container or cap with your fingertips to avoid the possibility of sample contamination. The inside of the cap and container should not come into contact with anything other than the atmosphere and the collected sample.
- Cap the bottle immediately after sample collection.
- Fill the bottle to the shoulder, leaving an air space. Do not allow the sample to overflow the sample bottle.
- Adjust the tap flow rate to prevent splashing.
- Ask the laboratory for further instructions if necessary.

How do I handle and store the samples?

- To prevent significant changes in target bacterial populations, the samples should be chilled to about 4°C while awaiting transport to the laboratory. (The low temperature slows growth and helps to maintain the target bacterial population at the level that existed at the time of sample collection.)
- Submit samples to the laboratory as quickly as possible after collection. The laboratory will provide you with information concerning the timeframe within which microbiological samples must be received, usually 24 hours or less.
- For transport to the laboratory, place samples in coolers or in foam pack containers with ice or ice packs. Do not pack the bottles with loose ice as this may contaminate the sample. If loose ice must be used, the ice should be encased in waterproof packaging or a sealed container.
- Do not allow samples to freeze. Some courier companies offer heated shipping in the winter months.
- Ship samples as early in the week as possible so that the laboratory receives them well before the weekend. Your samples will be ruined if they are being stored over a weekend because microbiological samples need to be received and analysis started within 24 hours of the time of collection.

When and how must I test for chlorine residual?

If the system is currently using chlorination or chloramination and the sample is a distribution system sample taken for microbiological testing, you must ensure that the chlorine residual is tested at the same time as sample collection and at the same location from which the sample is collected.

Record the chlorine residual on the microbiological sample submission forms, if specific directions for recording are not provided by the laboratory.

Step 4: Testing for Microbiological Parameters

This involves the analysis of certain indicator bacteria (*E. coli*, total coliforms and heterotrophic bacteria). If directions from the laboratory differ from the guidance provided in this section, please follow the directions of the laboratory.

Schedules 6, and 10 to 12 of the Drinking- Water Systems Regulation (O. Reg. 170/03) cover testing for biological parameters and the chlorine residual test.

This section applies to distribution samples taken for microbiological testing from systems that use chlorination or chloramination.

Step 5: Testing for Organic Parameters

Organic chemistry is the chemistry of carbon compounds; in general, organic parameters are compounds containing carbon. Typical chemical compounds defined as organic include pesticides, petroleum products, polychlorinated biphenyls (PCBs), phenols, chlorinated or non-chlorinated solvents, etc. Organic compounds can be liquid, solid or gaseous. Some dissolve or mix with water and others do not. If directions from the laboratory differ from the guidance provided in this section, please follow the directions of the laboratory.

Schedules 13 to 15 of the Drinking-Water Systems Regulation (O. Reg. 170/03) cover testing for organic parameters.

How do I collect the samples I need?

- Take considerable care when collecting these samples as contamination may occur from the outside of the sample containers and other materials such as gloves. (The unstable nature of many organic compounds requires strict adherence to sampling protocols, including the use of proper sample containers and preservatives if recommended.)
- Use sampling bottles provided by the laboratory. For most organic compounds a glass container is necessary. Some organic compounds are light-sensitive and require brown glass containers or storage away from light. The laboratory will provide this direction.
- Sample volume is a major consideration when collecting organic samples; in most cases, a relatively large sample size (500 to 1000 mL) is required.

How do I collect the samples I need for the analysis of volatile organic compounds?

- For samples which require analysis for volatile components (i.e., benzene, toluene, etc.), collect the samples in a manner in which no headspace (air pocket) is left in the bottle.
- To eliminate headspace, fill the container slowly to overflowing, avoiding any mixing or shaking.
- Place the cap on the bottle while the sample is overflowing, or fill sample slowly until there is a convex meniscus (dome) of water extending higher than the top of the container. Cap carefully; a small amount of sample may be lost when capped. Once capped, turn the bottle upside down. No air bubble should be present.

How do I handle and store the samples?

- Submit samples to the laboratory as quickly as possible after collection, or as directed by the laboratory.
- If the samples must be stored, then keep them refrigerated.
- Ship samples as early in the week as possible because there is no guarantee that couriers will store them in a refrigerator over a weekend.
- Many organic compounds break down or undergo transformations when subjected to light or in the presence of bacteriological activity or chlorine. Light sensitive organic compounds must be collected and submitted in brown glass containers. (Be sure to get clear instructions from the laboratory[ies].)

What inorganic parameters must I sample for?

These tests include nutrients (nitrate, nitrite), ions (such as fluoride or sodium), and the metals group (including commonly known elements, such as iron, copper, lead, mercury and manganese). For the most part, these tests are performed on drinking water samples to assess the overall quality of the water.

How do I collect the samples I need?

- Use the sampling bottles provided by the laboratory. If the bottle contains a preservative, do not touch or handle the preservative. Do not rinse the containers, as this will remove some or all of the preservative, reducing the accuracy of the test results. Do not allow the sample bottle to overflow or the preservative will be diluted. Ask the laboratory for further instructions, if necessary.
- It some cases, such as when strong acid is used to preserve the sample, the laboratory may direct you to add the preservative after taking the sample. It is very important that you follow this direction if provided. It will make a difference to the accuracy of the results.
- Fill all sampling bottles to the shoulder.
- In general, inorganic compounds are sampled in plastic containers, although glass containers may be used for some tests such as mercury.

How do I handle and store the samples?

- Submit samples to the laboratory as quickly as possible after collection. Pay close attention to the holding times as they differ significantly between different inorganic parameters (e.g. Nitrate and Nitrite require 7 days; Iron requires 60 days).
- If the samples must be stored, then keep them refrigerated.
- Ship samples as early in the week as possible because there is no guarantee couriers will store them in a refrigerator over a weekend.

Step 6:
Testing for Inorganic Parameters

Laboratories generally require one or more bottles for what they term general chemistry testing and a separate bottle for metals testing (because a preservative is required to stabilize the metals in the sample). If directions from the laboratory differ from the guidance provided in this section, please follow the directions of the laboratory.

Schedules 13 to 15 of the Drinking-Water Systems Regulation (O. Reg. 170/03) cover testing for inorganic parameters.

Step 7: Records and Record Keeping

According to the Drinking-Water System Regulation (O. Reg. 170/03), written records must be compiled during sampling, and chain-of-custody forms must be completed and submitted to the laboratory with the samples. The owner/operator of the treatment system must keep sampling records for a specified period of time.

Section 13 of the Drinking-Water Systems Regulation (O. Reg. 170/03) covers records and record keeping.

What information must be recorded when I collect samples?

Record the date and time the sample was taken.
Note: The recording of the time when the sample was taken is very critical when microbiological samples are collected because holding times differ significantly between parameters.

Record the location where the sample was taken, and the name of the person who took the samples that are required by the Drinking-Water Systems Regulation.

In addition, the laboratory must provide you with chain-of-custody forms which must be filled out and submitted to the laboratory with the samples. Ensure that the mandatory fields in the chain-of-custody forms are complete and that you have indicated whether or not the sample is a regulated sample. It is critical that drinking water samples are collected as specified by the laboratory. Otherwise, inaccurate analyses may create false positive results and unnecessary notifications and corrective actions.

How long must sampling records be kept?

These records must be kept for at least 5 years if the records relate to microbiological samples, and for at least 15 years if the records relate to chemical samples.

Step 8: Finding More Information

The Ministry of the Environment has prepared more detailed information on collecting and handling drinking water samples.

See the Ministry's document "Practices for the Collection and Handling of Drinking Water Samples", which is available on the Ministry's website at www.ene.gov.on.ca.

To be clear about your specific legal requirements, you must refer to the text of the Drinking-Water Systems Regulation (O.Reg.170/03) and the *Safe Drinking Water Act*, 2002. You can access these at www.ene.gov.on.ca under the section entitled Water, or by calling our Public Information Centre at 1-800-565-4923.

This is the third guide in a four-guide kit.

The Ontario Ministry of the Environment has prepared a series of guides for the four categories of regulated, non-municipal drinking water systems. If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, download an electronic version from the Ministry's website at www.ene.gov.on.ca, or call our Public Information Centre at 1-800-565-4923. See the back page of this guide for other sources of information.

Guide 1, Does the Regulation Apply to Me?

Guides 2A-2D, A Guide for Regulated, Non-Municipal Drinking Water Systems

- Guide 2A, Non-Municipal Seasonal Residential Systems
- Guide 2B, Non-Municipal Year-Round Residential Systems
- Guide 2C, Small Non-Municipal Non-Residential Systems
- Guide 2D, Large Non-Municipal Non-Residential Systems

Guide 3, How to Collect Drinking Water Samples

Guide 4, Glossary of Terms

Note: reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03), the *Safe Drinking Water Act*, 2002, and the other related regulations and procedures to ascertain an owner/operator's specific legal requirements.

Where Do I Go From Here?

The Kit for Regulated Non-Municipal Drinking Water Systems contains a number of Guides that, together, are designed as a support tool to help owners and operators of regulated systems deliver safe, clean drinking water. Titles in this Kite will help you:

☐ determine whether the system you own or operate is regulated under O. Reg. 170/03;
☐ provide more detailed information for each of the four categories of regulated, non-municipal drinking water systems;
☐ show you how to collect samples and have them analyzed; and
☐ provide definitions of key technical and water management terms.

If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, or download an electronic version from the Ministry's website at www.ene.gov.on.ca. See the back cover of this guide for details.

How do I obtain the documents and contact information I need?

How can I obtain a copy of the *Drinking-Water Systems Regulation* and additional information on my regulatory responsibilities?	Visit the Ministry website at www.ene.gov.on.ca, click on "Water" then scroll down the page and click on "Drinking-Water Systems Regulation – Information Page" (http://www.ene.gov.on.ca/envision/water/sdwa/dwsr.htm). This will take you to a full page of links to key documents, technical updates, laboratory licensing information, legislation and regulations, forms, general information and related documents. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
How do I find a Licenced laboratory for analyzing my drinking water samples?	Check the Ministry website for a list of laboratories Licenced to perform drinking water testing under the *Safe Drinking Water Act*, available at: http://www.ene.gov.on.ca/envision/water/sdwa/Licencedlabs.htm. You can also call the Ministry of the Environment Laboratory Licensing Administrator at 416-235-6370.
How do I contact the Local Medical Officer of Health or the Public Health Unit for my community?	Check the "Blue Pages", under the heading "Health", in your local telephone directory for the listing of your public health unit. You can also visit the website of the Ministry of Health and Long-Term Care (MOHLTC) at www.health.gov.on.ca, or call the MOHLTC info-line at 1-800-268-1154, or 416-314-5518 in Toronto.
Where can I find the nearest local or regional office of the Ministry of the Environment?	Check the "Blue Pages", under the heading "Environment", in your local telephone directory. You can also visit the Ministry website at www.ene.gov.on.ca and look under the heading "About the Ministry" on the home page. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
Where can I find more information on training and certification of system operators?	Contact the Ontario Environmental Training Consortium (OETC) through its website at www.oetc.on.ca, or by telephone at 905-796-2851. For more information, the new Certification of Drinking-Water System Operators and Water Quality Analysts Regulation (O. Reg. 128/04) is available at: http://www.e-laws.gov.on.ca/DBLaws/Regs/English/040128_e.htm.

The Ontario Drinking-Water Systems Regulation
(O. Reg. 170/03)

Guide 4:
Glossary of Terms

A Guide for Owners and Operators of **Non-Municipal Drinking Water Systems**

Ontario Ministry of the Environment
December 2004

Protecting our environment. Ontario

This publication is provided for information purposes only.

This guide is part of a four-guide kit designed to assist owners and operators of regulated non-municipal drinking water systems more fully understand their responsibilities in delivering safe, clean drinking water. However, readers are advised against using this document for compliance purposes. Reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03) and the *Safe Drinking Water Act, 2002* to ascertain an owner/operator's specific legal requirements and to determine whether or not a system is in compliance. The Act and its regulations may be obtained from Ontario's e-laws website at www.e-laws.gov.on.ca or by calling the Ministry's Public Information Centre at 1-800-565-4923.

For the exact wording of technical terms and other definitions, refer to the text of the Drinking-Water Systems Regulation (O.Reg.170/03) and the other cited regulations and statutes. You can access these on Ontario's e-laws website at www.e-laws.gov.on.ca. For other sources of information, see the back cover of this guide.

At the end of this guide, you will find more information about other resources available, including directions on how to obtain the other guides of this kit and who you can call if you have questions about your responsibilities under the Ontario's Drinking-Water Systems Regulation (O. Reg. 170/03).

A number of key technical and water management terms are defined in Ontario's Drinking-Water Systems Regulation (O. Reg. 170/03)

This glossary is for guidance only. For a complete definition of some terms, it is often necessary to refer to another document where the term is fully defined. For example, for a complete definition of "nursing home," you must refer directly to the *Nursing Homes Act.*

Accredited laboratory	When sending drinking water samples to a laboratory for analysis, you are required to use a laboratory that is licenced for the parameter being tested. (See "list of licenced laboratories" in this Guide) A laboratory must successfully meet the requirements of the current accreditation program administered by the Canadian Association of Environmental Analytical Laboratories (CAEAL). Upon CAEAL's recommendation, the Standards Council of Canada (SCC) may grant accreditation. A laboratory can be licenced to test only one or a few parameters, or a great variety of parameters.
Certified Operator	"Certified Operator" means, with respect to a subsystem, an individual who holds or is deemed to hold a certificate under Ontario Regulation 128/04 (Certification of Drinking-Water System Operators and Water Quality Analysts) that is applicable under that regulation to that subsystem or that type of subsystem, but does not include an individual who holds or is deemed to hold only a water quality analyst's certificate or conditional water quality analyst's certificate under that regulation.
Chemical Parameters	"Chemical Parameters" refers to all the chemicals that must be tested for under this Regulation. These parameters include volatile organics, inorganics, pesticides and PCBs, and do not include what are known as microbiological parameters (i.e., coliforms and general bacteria population), or operational parameters such as turbidity and chlorine residual. A complete list of chemical parameters can be found in Schedule 1 of the Ontario Drinking-Water Quality Standards Regulation.
Children's Camp	"Children's Camp" means a camp that is intended primarily for campers under 18 years of age and that is a class A camp or class B camp within the meaning of Regulation 568 of the Revised Regulations of Ontario, 1990 (Recreational Camps) under the *Health Protection and Promotion Act*.
Chloramination	"Chloramination" means combined chlorine residual disinfection where the combined chlorine residual is predominately in the form of monochloramine
Chlorination	"Chlorination" means free chlorine residual disinfection
Chlorine Residual	"Chlorine Residual" is the concentration of chlorine remaining in water at the end of a specified contact period, which will react chemically and biologically. It may be present as either 'combined' or 'free chlorine' – or both. The absence of chlorine residual is an immediate indication of potential water quality or treatment process concerns, and that water is not protected from contamination by microbiological organisms.
Coliforms (total coliforms, *E. coli*, fecal coliforms)	"Coliforms" are a group of bacteria typically found in the intestinal tracts of warm-blooded animals (including humans), as well as in plants, soil, air and water. Fecal coliforms (and in particular *E. coli* – a member of the fecal coliform group) are a specific class of bacteria that only inhabit the intestines of warm-blooded animals.
Day Nursery	"Day Nursery" means a day nursery as defined in the *Day Nurseries Act.*
Deficiency	"Deficiency" as defined in O. Reg. 172/03 means, in respect of a drinking water system, a violation of any of the following provisions is prescribed as a deficiency for the purposes of the Act, including the definition of "deficiency" in subsection 2 (1) of the Act, if, in the opinion of the Director, the violation poses a drinking water health hazard: 1. Subsection 18 (1) of the Act. 2. Schedules 1, 2 and 6 to 18 to Ontario Regulation 170/03 (Drinking-Water Systems).
Delivery Agent Care Facility	"Delivery Agent Care Facility" means a) a place where an emergency hostel service that receives funding under the *Ontario Works Act, 1997* is provided, b) a domiciliary hostel that receives funding under the *Ministry of Community and Social Services Act*, c) a place where a resource centre program that receives funding under the *Day Nurseries Act* is provided, or d) a place where a recreational program that receives funding under the *Day Nurseries Act* is provided.

Designated Facility	"Designated Facility" means a) a children's camp, b) a delivery agent care facility, c) a health care facility, d) a school or private school, e) a social care facility, or f) a university, a college of applied arts and technology, or an institution with authority to grant degrees.
Director's Eligibility List	The Director's Eligibility List is a list of out-of-province laboratories that have been approved by the Director of the Laboratory Services Branch to test Ontario's drinking water. This list can be found on the Ministry of the Environment's web site by clicking on the following web address: http://www.ene.gov.on.ca/envision/water/sdwa/licencedlabs.htm and scrolling to the bottom of the page. If you own or know of an out-of-province laboratory that would like to make an application to be included on the Director's Eligibility list, you can access the necessary forms on the Ministry of the Environment's web site by going to: Form# 1868e Out-of-Province Permission Letter for List of Out-of-Province Eligible Laboratories Form# 1869e Director's List Out-of-Province Eligible Laboratories
Distribution Sample	"Distribution Sample" means, with respect to a drinking water system, a water sample that is taken, in the drinking water system's distribution system or in plumbing that is connected to the drinking water system, from a point significantly beyond the point at which drinking water enters the distribution system or plumbing.
Distribution System	"Distribution System" means the part of a drinking water system that is used in the distribution, storage or supply of water and that is not part of a treatment system.
Drinking Water	"Drinking Water" means, a) water intended for human consumption, or b) water that is required by an act, regulation, order, municipal by-law or other document issued under the authority of an act, (i) to be potable, or (ii) to meet or exceed the requirements of the prescribed drinking water quality standards.
Drinking Water System	"Drinking Water System" means a system of works, excluding plumbing, that is established for the purpose of providing users of the system with drinking water and that includes, a) any thing used for the collection, production, treatment, storage, supply or distribution of water, b) any thing related to the management of residue from the treatment process or the management of the discharge of a substance into the natural environment from the treatment system, and c) a well or intake that serves as the source or entry point of raw water supply for the system.
E. coli	See "Coliforms."
Fecal Coliforms	See "Coliforms."
Food Service Establishment	"Food Service Establishment" means food service premises, as defined in Regulation 562 of the Revised Regulations of Ontario, 1990 (*Food Premises*) under the Health Protection and Promotion Act, to which the general public is admitted, other than temporary food service premises that are operated solely in conjunction with an exhibition, fair, carnival, sports meeting or other special or temporary event
Free Chlorine Residual	See "Chlorine Residual."

Groundwater

"Groundwater" means water located in subsurface aquifer(s) where the aquifer overburden and soil act as an effective filter that removes micro-organisms and other particles by straining and antagonistic effect, to a level where the water supply may already be potable but disinfection is required as an additional health risk barrier.

Health Care Facility

"Health Care Facility" means a facility that provides overnight accommodation and that is,

a) a hospital within the meaning of the *Public Hospitals Act* or the *Community Psychiatric Hospitals Act*,
b) a private hospital within the meaning of the *Private Hospitals Act*,
c) a psychiatric facility within the meaning of the *Mental Health Act*,
d) a nursing home within the meaning of the *Nursing Homes Act*,
e) a home within the meaning of the *Homes for the Aged and Rest Homes Act*,
f) an approved charitable institution within the meaning of the *Charitable Institutions Act* that is approved under section 3 of that Act as, (i) a halfway house where rehabilitative residential group care may be provided for adult persons, (ii) a home for the aged, or (iii) a home where residential group care may be provided for handicapped or convalescent adult persons,
g) a cancer centre established by the Ontario Cancer Treatment and Research Foundation under the *Cancer Act*,
h) a home for special care within the meaning of the *Homes for Special Care Act*,
i) an approved home within the meaning of the *Mental Hospitals Act*,
j) a residence for seniors or retired persons, or any other similar residence, where attainment of a mature age is a factor in being accepted for occupancy,
k) a nursing station, health centre, clinic or other facility that receives funding through the Ministry of Health and Long-Term Care's Underserviced Area Program, or
l) a facility owned or leased by a person who receives funding from the Ministry of Health and Long-Term Care for one or more of the following health care support services that are provided to or are available to residents of the facility: (i) a residential treatment services program, (ii) a withdrawal management services program, (iii) a dedicated supportive housing project.

Heterotrophic Plate Count

The "Heterotrophic Plate Count" (HPC) is a procedure for estimating general bacteria population (i.e., the number of live heterotrophic bacteria) in drinking water samples. Heterotrophic bacteria are those that are unable to synthesize their own food and are dependent on complex organic substances for nutrition. The HPC test can provide useful information about deteriorating water quality and also provides supporting data on the significance of coliform test results. The HPC test may be performed using the spread plate, pour plate or membrane filtration method.

Infiltration Gallery

"Infiltration Gallery" means a subsurface groundwater collection system constructed with open-jointed or perforated pipes that discharge collected water into a watertight chamber.

Interested Authority

"Interested Authority" means,

a) with respect to a delivery agent care facility, the delivery agent designated under the *Ontario Works Act, 1997* or the *Day Nurseries Act* for the geographic area in which the facility is located, or any successor of that delivery agent,
b) with respect to a health care facility, the Ministry of Health and Long-Term Care, or any successor of that ministry,
c) with respect to a school, the Ministry of Education, or any successor of that ministry,
d) with respect to a social care facility, the Ministry of Community, Family and Children's Services, or any successor of that ministry, or
e) with respect to a university, a college of applied arts and technology, or an institution with authority to grant degrees, the Ministry of Training, Colleges and Universities, or any successor of that ministry.

Interim Maximum Acceptable Concentration (IMAC)	The IMAC is a health-related standard established for parameters either when there are insufficient toxicological data to establish a MAC (see 'maximum acceptable concentration') with reasonable certainty, or when it is not feasible to establish a MAC at the desired level. The Ministry document titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines" (formerly known as the Ontario Drinking Water Standards) sets IMACs and MACs for a wide range of parameters. For health-related chemical parameters that must be tested under this Regulation, IMACs and MACs are listed in Schedule 1 of the Ontario Drinking-Water Quality Standards Regulation.
Large Non-Municipal Non-Residential System	"Large Non-Municipal Non-Residential System" means a non-municipal drinking water system that is capable of supplying drinking water at a rate of more than 2.9 litres per second and does not serve (a) a major residential development, or (b) a trailer park or campground that has more than five service connections.
Licenced Laboratories	To be licenced, a laboratory must be accredited for each specific parameter that is being tested. You must select a laboratory or laboratories licenced by the Ministry of the Environment. To view the list of Ontario-based laboratories that have been licenced by the Director of Laboratory Services Branch to test Ontario's drinking water, go to http://www.ene.gov.on.ca/envision/water/sdwa/licencedlabs.htm If you know of a laboratory that would like to apply for a licence, the laboratory should complete Form# 1828e Application for a Licence to Perform Drinking Water Testing
Maximum Acceptable Concentration (MAC)	The MAC is a health-related standard established for parameters which when present above a certain concentration, have known or suspected adverse health effects. The length of time the MAC can be exceeded without injury to health will depend on the nature and concentration of the parameter. The Ministry document titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines" (formerly known as the Ontario Drinking Water Standards) sets MACs and IMACs (see 'Interim Maximum Acceptable Concentration') for a wide range of parameters. For health-related chemical parameters that must be tested under this Regulation, MACs and IMACs are listed in Schedule 1 of the Ontario Drinking-Water Quality Standards Regulation.
Medical Officer of Health	"Medical Officer of Health" with respect to a drinking water system means the medical officer of health for the health unit in which the system is located or if none exists, the Chief Medical Officer of Health.
Microbiological Parameter	Contamination of water supplies by untreated sewage or poorly managed livestock manure runoff presents the greatest risk to public health from microorganisms associated with drinking water. To detect and protect against such organisms, the testing for 'microbiological parameters' and monitoring of chlorine residual is required (where chlorination is provided). Microbiological parameters in this Regulation include: total coliforms, *E. coli*, fecal coliforms and general bacteria population. (See 'Coliforms' and 'Heterotrophic Plate Count.')
Non-Municipal Drinking Water System	"Non-Municipal Drinking Water System" means a drinking water system that is not a municipal drinking water system.
Non-Municipal Seasonal Residential System	"Non-Municipal Seasonal Residential System" means a non-municipal drinking water system that is a seasonal system and serves (a) a major residential development, or (b) a trailer park or campground that has more than five service connections.
Non-Municipal Year-Round Residential System	"Non-Municipal Year-Round Residential System" means a non-municipal drinking water system that is a not a seasonal system and serves (a) a major residential development, or (b) a trailer park or campground that has more than five service connections.

Ontario Drinking Water Quality Standards	"Ontario Drinking Water Quality Standards" means Ontario Regulation 169/03 (Ontario Drinking-Water Quality Standards).
Ontario Regulation 128/04 – Certification of Drinking-Water System Operators and Water Quality Analysts	Made under the *Safe Drinking Water Act*, this Regulation establishes professional standards for operators and water quality analysts. It is also intended to give greater assurance of safe drinking water to the residents of Ontario through ensuring that operators have the education, experience and knowledge to perform these responsibilities effectively.
Ontario Regulation 459/00	The *Safe Drinking Water Act, 2002* replaces the Drinking Water Protection Regulation (O. Reg. 459/00) and the Drinking Water Protection Regulation for Designated Facilities (O. Reg. 505/01). O. Reg. 459/00 was revoked on June 1, 2003. Made under the OWRA, and part of Operation Clean Water, O. Reg. 459/00 is a comprehensive action plan to give Ontario residents the cleanest and safest drinking water possible. The Regulation, which puts into law the Ontario Drinking Water Quality Standards (see 'Ontario Drinking Water Quality Standards'), applies to water treatment and distribution systems that currently require approval under the OWRA, including municipal water works and other large systems.
Ontario Regulation 505/01	The *Safe Drinking Water Act, 2002* replaces the Drinking Water Protection Regulation (O. Reg. 459/00) and the Drinking Water Protection Regulation for Designated Facilities (O. Reg. 505/01). O. Reg. 505/01 was revoked on June 1, 2003. Made under the *OWRA*, and part of Operation Clean Water, O. Reg. 505/01 is the government's province-wide effort to improve water quality and delivery in the province. This Regulation strengthens the protection of populations that are less resistant to contaminants in drinking water. It applies to schools, day nurseries, nursing and retirement homes and social and health care facilities in the broader public sector and private sector that have their own water supply system. Populations more sensitive to contaminants include: infants, children, pregnant women, the elderly, and those with compromised immune systems.
Parameter	"Parameter" refers to a measurable or quantifiable characteristic or feature. This Regulation requires a number of microbiological and chemical parameters to be tested for in a water sample analysis (see 'chemical parameters' and 'microbiological parameters'). Schedule 1 of the Ontario Drinking-Water Quality Standards Regulation lists all of the chemical parameters that must be tested for, and specifies acceptable concentrations for those that are health-related. A description of individual parameters relevant to this Regulation can be found in the Ministry document titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines" (formerly known as the Ontario Drinking Water Standards).
Point of Entry Treatment Unit	"Point of Entry Treatment Unit" means, a) is designed to provide primary disinfection, b) is installed in a drinking water system at or near where water from the system enters a building or other structure, and c) is connected to the plumbing associated with the building or other structure.
Plumbing	"Plumbing" means a system of works, that comprise a 'water system' for the purposes of the definition of "plumbing" in subsection 1(1) of the *Building Code Act, 1992,* other than equipment installed in plumbing to treat water, and (b) that are connected to a drinking water system.
Primary Disinfection	"Primary Disinfection" means a process or series of processes intended to remove or inactivate human pathogens such as viruses, bacteria and protozoa in water.

Private Residence	"Private Residence" means a dwelling place occupied for an extended period of time by the same persons, if, a) the residents have a reasonable expectation of privacy, b) food preparation, personal hygiene, and sleeping accommodations are not communal in nature, and c) any use of the dwelling place by a resident for a home occupation, trade, business, profession or craft is secondary to the use of the dwelling place as a residence and does not use more than 25 per cent of the indoor floor area.
Procedure for Corrective Action for Systems Not Currently Using Chlorine	"Procedure for Corrective Action for Systems Not Currently Using Chlorine" means the document of that name, originally dated April 16, 2003, published by and available from the Ministry, as amended from time to time.
Procedure for Disinfection of Drinking Water in Ontario	"Procedure for Disinfection of Drinking Water in Ontario" means the document of that name, originally dated April 16, 2003 and amended June 1, 2003, published by and available from the Ministry, as amended from time to time.
Professional Engineer	A "Professional Engineer" means a professional engineer as defined in the *Professional Engineers Act.*
Professional Hydrogeologist	A "Professional Hydrogeologist" means a hydrogeologist who is a member of the Association of Professional Geoscientists of Ontario.
Provincial Officer	A "Provincial Officer" is a peace officer who has been granted the authority under the *SDWA* to enforce the provisions of the Regulation. The authority given under the Act allows the officer to investigate offences and prosecute any person whom the provincial officer reasonably believes is guilty of an offence under the Act. Under Regulation 170/03, provincial officers are given the authority to post warning notices, as required, if the owner of the water treatment or distribution facility fails to do so.
Public Facility	"Public Facility" means, a) a food services establishment, b) a place that operates primarily for the purpose of providing overnight accommodation to the traveling public, c) a trailer park or campground, d) a marina, e) a church, mosque, synagogue, temple or other place of worship, f) a recreational camp, g) a recreational or athletic facility, h) any place, other than a private residence, where a service club or fraternal organization meets on a regular basis, or i) any place where the general public has access to a washroom, drinking water fountain or shower; but does not include a designated facility.
Public Health Inspector	"Public health inspector" means a public health inspector of a board of health, certified by the Canadian Institute of Public Health Inspectors.
Raw Water	"Raw Water" means water that is in a drinking water system or in plumbing that has not been treated in accordance with, a) the prescribed standards and requirements that apply to the system, or b) such additional treatment requirements that are imposed by the licence or approval for the system, if the system is licenced or approved under this Act.
Raw Water Supply	"Raw Water Supply" means water outside a drinking water system that is a source of water for the system.

Resample and Test	"Resample and Test" means, a) with respect to corrective action that arises from the test of a water sample for a microbiological parameter, (i) take a set of drinking water samples, at approximately the same time, with (A) at least one sample from the same location as the sample that gave rise to the corrective action, (B) at least one sample from a location that is a significant distance upstream from the location described in sub-subclause (A), if that is reasonably possible, and (C) at least one sample from a location that is a significant distance downstream from the location described in sub-subclause (A), if that is reasonably possible, and (ii) conduct, on the samples taken under subclause (i), the same test that gave rise to the corrective action; or b) with respect to corrective action that arises from the test of a water sample for a parameter that is not a microbiological parameter, (i) take a water sample from the same location as the sample that gave rise to the corrective action, and (ii) conduct, on the sample taken under subclause (i), the same test that gave rise to the corrective action.
School	"School" or "private school" means a school or private school as defined in the *Education Act.*
Seasonal System	"Seasonal System" means a drinking water system that, (a) does not operate for at least 60 consecutive days in every calendar year, or (b) does not operate for at least 60 consecutive days in every period that begins on April 1 in one year and ends on March 31 in the following year.
Secondary Disinfection	"Secondary Disinfection" means a process or series of processes intended to provide and maintain a disinfectant residual in a drinking water system's distribution system, and in plumbing connected to the distribution system, for the purposes of, a) protecting water from microbiological re-contamination, b) reducing bacterial regrowth, c) controlling biofilm formation, and d) serving as an indicator of distribution system integrity, and includes the use of disinfectant residuals from primary disinfection to provide and maintain a disinfectant residual in a drinking water system's distribution system for the purposes described in clauses (a) to (d).
Service Connection	"Service Connection" means, (a) a point where a drinking water system connects to plumbing, or (b) in a trailer park or campground, a fixture that allows a trailer or other vehicle to connect to the trailer park's or campground's drinking water system.
Service Pipe	"Service Pipe" means the pipe portion of a drinking water system that extends from a watermain to the property line of a property serviced by the watermain.
Small Non-Municipal Non-Residential System	"Small Non-Municipal Non-Residential System" means a non-municipal drinking water system that is not capable of supplying drinking water at a rate of more than 2.9 litres per second, serves a designated facility or public facility and does not serve (a) a major residential development, or (b) a trailer park or campground that has more than five service connections.

Social Care Facility	"Social Care Facility" means, a) a facility designated by the regulations under the *Developmental Services Act* as a facility to which that Act applies, b) a residence licenced as a children's residence under the *Child and Family Services Act*, c) a facility where child development services, child treatment services, child welfare services, community support services or young offenders services, within the meaning of the *Child and Family Services Act*, are provided, unless the facility is located in a private residence, d) a facility where child and family intervention services, within the meaning of Regulation 70 of the Revised Regulations of Ontario, 1990 (General) under the *Child and Family Services Act*, are provided, unless the facility is located in a private residence, e) a place where an emergency shelter service that receives funding under the *Ministry of Community and Social Services Act* is provided, unless the place is located in a private residence, f) a day nursery, g) an Ontario Early Years Centre or a satellite program of the Ontario Early Years Centre that receives funding under the *Ministry of Community and Social Services Act*, h) a sheltered workshop that receives funding under the *Developmental Services* Act or the *Ministry of Community and Social Services Act*, i) a place where a supported employment program that receives funding under the *Developmental Services Act* or the *Ministry of Community and Social Services Act* is provided, j) a place where an adults' community support service that receives funding under the *Developmental Services Act* is provided, unless the place is located in a private residence, k) a place where an employment preparation, training and job placement program that receives funding under the *Developmental Services Act* or the *Ontario Disability Support Program Act, 1997* is provided, l) a place where a violence against women program that receives funding under the *Ministry of Community and Social Services Act* is provided, unless the place is located in a private residence, m) a place where an aboriginal healing and wellness program funded under the Aboriginal Healing and Wellness Strategy is provided.
Subsystem	"subsystem" means a distribution subsystem, distribution and supply subsystem, water treatment subsystem, limited groundwater subsystem or limited surface water subsystem; as defined in Ontario Regulation 128/04 (Certification of Drinking-Water System Operators and Water Quality Analysts).
Surface Water	"Surface Water" means water bodies (lakes, wetlands, ponds – including dug-outs), water courses (rivers, streams, water-filled drainage ditches), infiltration trenches, and areas of seasonal wetlands.
Total Coliforms	See "Coliforms."
Trained Person	"Trained Person" means, (a) an individual who holds or is deemed to hold a certificate under Ontario Regulation 128/04 (Certification of Drinking-Water System Operators and Water Quality Analysts), other than an individual who holds or is deemed to hold only a water quality analyst's certificate or conditional water quality analyst's certificate under that regulation, or (b) a person who, in the preceding 36 months, successfully completed a course approved by the Director that relates to the operation and routine maintenance of drinking water systems.
Turbidity	"Turbidity" is a measure of the clarity of water. 'Turbidity' or 'cloudiness' in water is caused by the presence of tiny suspended particles of matter such as clay, silt, spores, plankton and other microorganisms. Particles can shield microorganisms from being killed by disinfectants such as chlorine or ultra-violet light.

Overview of the Drinking-Water Systems Regulation

The following is a brief overview of the Drinking-Water Systems Regulation. The Drinking-Water Systems Regulation has 16 sections and 24 schedules:

Sections

Section 1	**Interpretation: general.** This section defines terms used in the Regulation. This includes a definition for "designated facilities" which is an expanded definition from the one found in Ontario Regulation 505/01 and now includes children's camps. The definition of each category of drinking-water system is also included.
Section 2	**Interpretation: groundwater under the direct influence of surface water.** This section defines whether a drinking-water system's raw water supply is deemed to be groundwater under the influence of surface water for the purposes of O. Reg. 170/03.
Section 3	**Interpretation: Open designated facilities and public facilities.** This section defines when schools, designated facilities and public facilities are "open."
Section 4	**Application.** This section includes a table of the categories of drinking-water systems and the schedules that apply to the drinking-water systems that are covered by Ontario Regulation 170/03.
Section 5	**Exemptions: residential systems.** This section provides some exemptions for non-municipal year-round residential drinking-water systems that obtain all of their water from a drinking-water system that is regulated under O. Reg. 170/03 and that provides secondary disinfection.
Section 6	**Exemptions: non-residential systems connected to other systems.** This section provides some exemptions for non-residential systems that are connected to and receive water from a drinking-water system that is regulated under O. Reg. 170/03 and that provides secondary disinfection.
Section 7	**Exemptions: non-residential systems that receive transported water.** This section provides some exemptions for non-residential systems that receive transported water from a drinking-water system that provides proper secondary disinfection, if certain requirements are met.
Section 8	**Exemptions: warning notices for systems.** This section provides exemptions from the requirements of O. Reg. 170/03 for certain drinking-water systems if signs are posted in accordance with the requirements described in this section. These systems include those that do not use electricity as well as small non-municipal non-residential systems that use electricity and also do not serve any designated facilities or food service establishment that rely on the system for the supply of potable water (under the Food Premises Regulation, Regulation 562). This section also describes sunset dates for these exemptions that apply to most of the systems affected and after which those systems will have to comply with all of the requirements of the Regulation, including testing and treatment requirements.
Section 9	**Exemptions from approval requirements of the *Safe Drinking Water Act, 2002.*** This section provides an exemption for municipal non-residential systems and some municipal residential systems from having to obtain an approval under Part V of the *Safe Drinking Water Act, 2002.*
Section 10	**Revocation of the *Ontario Water Resources Act* (OWRA) approvals for non-municipal systems.** This section sets out when approvals granted under the OWRA for non-municipal systems are revoked.
Section 11	**Annual Reports.** This section outlines the requirements with respect to submitting an annual report for all municipal and regulated non-municipal systems and includes the deadline for submitting these reports to the Director (Ministry of the Environment), based on the category of drinking-water system.

Section 12	**Information to be available.** This section sets out a number of requirements for making information available for inspection by a provincial officer or any member of the public.
Section 13	**Retention of records.** This section sets out the specific periods that different reports must be kept by the owner of a drinking-water system.
Section 14	**Forms.** This section provides the Director (Ministry of the Environment) with authority to require any written notices, warning notices, records or reports to be provided or approved by the Director. In addition, it allows the Director to specify the electronic format in which any document or record may be submitted in connection with the Regulation.
Section 15	**Purpose of notice to interested authorities.** This section explains that the notice given to interested authorities is to provide them with information relating to compliance with O. Reg. 170/03.
Section 16	**Commencement.** This section indicates that O. Reg. 170/03 comes into force on June 1, 2003.

Schedules

Schedule 1-2	**Treatment Equipment.** These two schedules contain performance-based criteria which enables owners of non-municipal systems and specified municipal systems to choose the technology that meets the required performance. Includes deadlines for meeting the requirements for provision of treatment equipment by drinking-water category.
Schedule 3	**Point of Entry Treatment.** This schedule provides an exemption from the requirement for secondary disinfection if a drinking-water system uses a point of entry treatment approach and also meets specific criteria.
Schedule 4-5	**Relief from Schedule 1 and Schedule 2.** These two schedules allow owners of drinking-water systems with high quality groundwater to apply to the Director (Ministry of the Environment) for relief from the requirements for provision of treatment equipment (i.e., disinfection). The application must contain a risk analysis and management plan to show that the source water is of high quality. The approval for relief from all treatment requirements will be reviewed every five years.
Schedule 6-15	**Operational Checks, Sampling and Testing.** These 10 schedules outline the requirements to perform regular operational checks of all water treatment equipment, and sample and test for microbiological and chemical parameters for the various categories of drinking-water systems.
Schedule 16	**Reporting Adverse Test Results and Other Problems.** This schedule outlines adverse test results and other problems which require immediate notification under section 18 of the SDWA. It sets out strict notification requirements including a requirement to notify the Spills Action Centre (SAC) and the Local Medical Officer of Health summarizing the actions taken to correct the adverse test result.
Schedule 17-18	**Corrective Action.** These two schedules outline corrective actions for different types of adverse test results and other problems observed for different categories of systems. Schedule 18 also references a more detailed procedure related to corrective actions for systems that are not currently using chlorine.
Schedule 19	**Warning Notice of Potential Problems.** This schedule requires owners and operating authorities of drinking-water systems (other than large municipal systems) to post a warning notice if they are not complying with the microbiological testing, did not carry out corrective actions as stipulated, or are required by a corrective action step to notify all users of the system to use an alternate source or boil the water before use.
Schedule 20	**Engineers' Reports (municipal residential).** This schedule outlines the requirement for large and small municipal residential systems to prepare an Engineer's Report. This report must be prepared by a professional engineer in accordance with the document *"Terms of Reference for Engineers' Reports for Water Works"* (dated August 2000).
Schedule 21	**Engineering Evaluation Reports (municipal non-residential; non-municipal residential; non-municipal non-residential).** This schedule outlines the requirement to prepare an Engineering Evaluation Report. This report must be prepared by a professional engineer certifying that

all equipment necessary to comply with requirements for treatment and operational checks is being provided.

Schedule 22 **Summary Reports for Municipalities (municipal residential).** This schedule establishes a timetable for summary reports to be prepared related to municipal residential drinking-water systems regarding any approvals, or orders that the system failed to meet.

Schedule 23 **Inorganic Parameters (all systems).** This schedule provides a list of 9 inorganic parameters for the purposes of Regulation 170/03.

Schedule 24 **Organic Parameters (all systems).** This schedule provides a list of 56 organic parameters for the purposes of Regulation 170/03.

This is the fourth guide in a four-guide kit.

The Ontario Ministry of the Environment has prepared a series of guides for the four categories of regulated, non-municipal drinking-water systems. If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, download an electronic version from the Ministry's website at www.ene.gov.on.ca, or call our Public Information Centre at 1-800-565-4923. See the back page of this guide for other sources of information.

Guide 1, Does the Regulation Apply to Me?

Guides 2A-2D, Meeting my responsibilities under the Regulation

- Guide 2A, Non-Municipal Seasonal Residential Systems
- Guide 2B, Non-Municipal Year-Round Residential Systems
- Guide 2C, Small Non-Municipal Non-Residential Systems
- Guide 2D, Large Non-Municipal Non-Residential Systems

Guide 3, How to Collect Drinking Water Samples

Guide 4, Glossary of Terms

Note: reference should always be made to the text of the Drinking-Water Systems Regulation (O. Reg. 170/03), the *Safe Drinking Water Act*, 2002, and the other related regulations and procedures to ascertain an owner/operator's specific legal requirements.

Obtain the specific information you need to meet your regulatory responsibilities.

The Ontario Ministry of the Environment has prepared a series of guides to help you meet your regulatory responsibilities under the Drinking-Water Systems Regulation (O. Reg. 170/03). Titles in this kit will help you:

☐ determine whether the system you own or operate is regulated under O. Reg. 170/03;
☐ provide more detailed information for each of the four categories of regulated, non-municipal drinking-water systems;
☐ show you how to collect samples and have them analyzed; and
☐ provide definitions of key technical and water management terms.

If you do not have a copy of the relevant guide, please contact the nearest Ministry office for a copy, or download an electronic version from the Ministry's website at www.ene.gov.on.ca. See the back cover of this guide for details.

How do I obtain the documents and contact information I need?

How can I obtain a copy of the Drinking-Water Systems Regulation and additional information on my regulatory responsibilities?	Visit the Ministry website at www.ene.gov.on.ca, click on "Water" then scroll down the page and click on "Drinking-Water Systems Regulation – Information Page" (http://www.ene.gov.on.ca/envision/water/sdwa/dwsr.htm). This will take you to a full page of links to key documents, technical updates, laboratory licencing information, legislation and regulations, forms, general information and related documents. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
How do I find a licenced laboratory for analyzing my drinking water samples?	Check the Ministry website for a list of laboratories licenced to perform drinking water testing under the *Safe Drinking Water Act*, available at: http://www.ene.gov.on.ca/envision/water/sdwa/licencedlabs.htm. You can also call the Ministry of the Environment Laboratory Licencing Administrator at 416-235-6370.
How do I contact the Local Medical Officer of Health or the Public Health Unit for my community?	Check the "Blue Pages", under the heading "Health", in your local telephone directory for the listing of your public health unit. You can also visit the website of the Ministry of Health and Long-Term Care (MOHLTC) at www.health.gov.on.ca, or call the MOHLTC info-line at 1-800-268-1154, or 416-314-5518 in Toronto.
Where can I find the nearest local or regional office of the Ministry of the Environment?	Check the "Blue Pages", under the heading "Environment", in your local telephone directory. You can also visit the Ministry website at www.ene.gov.on.ca and look under the heading "About the Ministry" on the home page. Or contact the Ministry's Public Information Office toll-free at 1-800-565-4923, or at 416-325-4000 in Toronto.
Where can I find more information on training and certification of system operators?	Contact the Ontario Environmental Training Consortium (OETC) through its website at www.oetc.on.ca, or by telephone at 905-796-2851. For more information, the new Certification of Drinking-Water System Operators and Water Quality Analysts Regulation (O. Reg. 128/04) is available at: http://www.e-laws.gov.on.ca/DBLaws/Regs/English/040128_e.htm.

Updated December 2004
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Printed on recycled paper

ISBN 0-7794-4898-7
Pibs 4427e01